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ILLUSTRATIONS
OF THE
GENUS CAREX.



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ILLUSTRATIONS

OF THE

GENUS CAREX.

BY

FRANCIS BOOTT, M.D.,

TREASURER AND VICE-PRESIDENT OF THE LINNEAN SOCIETY.

"The men, who labour and digest things most,
Will be much apter to despair than boast."

Roscommon.



LONDON:

WILLIAM PAMPLIN, 45, FRITH STREET, SOHO.

1858.

PRINTED BY

JOHN EDWARD TAYLOR, LITTLE QUEEN STREET,
LINCOLN'S INN FIELDS, LONDON.

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J.D.S.

TO

JOHN AMORY LOWELL, ESQ.,

MEMBER OF THE CORPORATION OF HARVARD COLLEGE,

AND TRUSTEE OF THE LOWELL INSTITUTE IN BOSTON, NORTH AMERICA,

This Work is Dedicated

BY HIS GRATEFUL FRIEND,

THE AUTHOR.

MY DEAR LOWELL,

My original design in this Work was limited to the illustration of the CARICES of North America, which I had studied for several years under the advantage of frequent communication with my friend Mr. Carey, who had so ably described and grouped them in Dr. Gray's 'Manual of the Botany of the Northern States,' and the lithographed impressions were made in the prosecution of that design. The extensive and beautiful collection of specimens subsequently brought by Dr. Hooker from the East Indies, which were liberally placed in my hands by that eminent man, impelled me to extend my plan, and I have endeavoured to illustrate the Genus at large.

The figures, with few exceptions, are by M. Maubert, of Paris, drawn and engraved under the guidance and inspection of M. Spach: and whatever merit the work may have, it is due chiefly to them.

In M. Spach I have not only found the talent and learning of the acute and practised observer of nature, but the warm interest of the friend; and I owe to him not only that kind sympathy in my labours which has lightened and cheered them, but an amount of knowledge which I could not have acquired elsewhere. I was introduced to him by the late excellent M. Jussieu; and among the many uncovenanted blessings which an early love of plants has bestowed upon me, I look upon the friendship of M. Spach, so cordial and disinterested, as among the most precious.

To my honoured and much-loved friend Sir W. J. Hooker I owe all those facilities which his noble disposition so habitually places before all who consult his unrivalled Herbarium; and to Dr. Hooker an

encouragement I cannot adequately acknowledge, though I am fully sensible, from one so eminent for his attainments and labours, of the honour conferred upon me by it.

In my excellent friend Mr. Carey I ever found the fullest sympathy, and I had hoped to have been guided by his cautious judgment. But, like our friend Tuckerman, though from very opposite causes, he has been turned aside from his early pursuits.

I say nothing of the difficulties of my undertaking, undoubtedly increased by my inadequacy to meet them successfully. I might lay claim to some allowance by alluding to the imperfect success of several eminent names. I know of but one remarkable exception, and that is of the inimitable Schkuhr, whose 'Riedgräser,' from its truthfulness, simple beauty, and unpretending form, is without a rival in Botanical literature.

A few of the figures are by Miss Rees, a pupil of the Kensington School of Design, and all the lithographic copies are by her. Three of the engravings are by Mr. Castle, of London; all the rest were made in Paris.

F. B.

London, February 1, 1858.

EXPLICATIO TABULARUM.

- a. Perigynium antiee visum, interdum eum raeheola.
- a^x. Perigynii apex.
- b. Perigynium postiee visum.
- b^x. Perigynium latere visum.
- c. Perigynium transverse vel aliter seetum, saepe eum squama.
- c^x. Seetio baseos rostri.
- d. Rostri apex.
- e. Pistillum, interdum eum raeheola.
- e^x. Stylus.
- f. Achenium, interdum cum raeheola.
- f^x. Achenium, transverse seetum.
- f^{xx}. Achenium morbidum.
- g. Squama maseula.
- g^x. Squama mascula ex inferioribus.
- g^{xx}. Squama maseula ex superioribus.
- h. Squama fœminea.
- h^x. Squama fœminea ex inferioribus.
- h^{xx}. Squama fœminea ex superioribus.
- i. Braetea spieulæ lateralis, vel apex ejusdem.
- k. Bractea infima, vel apex vel seetio transversa ejusdem.
- k^x. Braetea eum vagina et ligula.
- l. Folii inferioris apex supra visus.
- m. Folii inferioris apex subtus visus.
- n. Folii superioris apex supra visus.
- o. Folii superioris apex subtus visus.
- p. Folii seetio transversa vel ejus vaginae.
- p^x. Folii apex.
- p^{xx}. Folii fragmentum marginale.
- p^{xxx}. Folii vaginæ apex.
- q. Culmi pars inferior.
- r. Culmi pars superior, saepe cum braetea vel ejusdem basi vel vagina, antiee vel postice visa.
- r^x. Culmi apieis seetio transversa.
- r^{xx}. Culmi mediæ partis seetio tranversa.
- s. Vaginæ floralis apex latere visus, vel pars ejusdem.
- t. Vaginæ floralis apex dorso visus.
- t^x. Vaginæ floralis basis dorso visa.
- u. Spica maseula.
- u^x. Stamen.
- v. Spica fœminea.
- v^x. Spica fruetifera.
- v^{xx}. Spieula sub anthesi.
- v^{xxx}. Spicula terminalis vel lateralis.
- w. Spathella (*perigynii modificatio*).
- x. Rachis spieulæ eum squamis masculis.
- x^x. Raehis paniculæ cum braeteola.
- y. Spieulæ basis, cum rachi intra perigynium orta.

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ILLUSTRATIONS

OF

THE GENUS CAREX.

1. *C. Thomsoni* (Boott); spica elongata cylindrica pallida, e spiculis androgynis apice masculis pluribus (30–50) ovatis sessilibus omnibus arcte contiguis vel demum inferioribus longe foliaceo-bracteatis subremotis composita; stigmatibus 2; perigyniis ovatis plus minus acuminato-rostratis, ore obliquo bidentato, plano-convexis utrinque nervosis, marginibus acutis serratis, viridibus demum pallidis ferrugineo-punctatis, squamam ovatam acuminatam cuspidata in margine late albo-hyalinam ferrugineo-punctatam subæquantibus vel eâ longioribus. (TAB. I.)

HAB. In regionibus tropicis Khasiæ, Drs. Thomson et Hooker! et Himalayæ, alt. 1–4000 ped., a Bhotan, Booth! ad Kumaon, Dr. Thomson!—In rupibus fluviorum crescens.

Cæspitosa. *Rhizoma* lignosum, reliquiis foliorum filamentosis nigris coronatum, fibris radicalibus pallidis longis desinens. *Culmus* validus, rigidus, 6–9-poll., lævis, obtusangulus, vaginis foliorum fere usque ad apicem tectus. *Folia* 1–2 lin. lata, culmo duplo longiora, rigida, basi vel omnino involuta, supra, præcipue ad margines, ferrugineo-punctata. *Vagina* intus membranacea, apice ciliolata, punctata. *Bractæ* 1–3 inferiores foliaceæ, elongatæ: infima interdum spicâ triplo longior: supremæ squamæformes, cuspidatæ. *Spica* rigida, ercta, 1½–4½ poll. longa, 3 lin. lata. *Spiculae* inferiores 4 lin. longæ, 2 lin. latæ: supremæ minores. *Perigynium* 1³/₁₀–1⁵/₁₀ lin. longum, 6/₁₀–7/₁₀ lin. latum, ad basin spiculæ latius, vix rostellatum, versus ejus apicem angustius, sensim acuminatum, in rostrum attenuatum, ore minimo clauso. *Achenium* 7/₁₀ lin. longum, ½ lin. latum, late ovale, obtusum, plano-convexus, demum subcompressum, fusco-olivaceum, lucidum.

This very distinct species was discovered by Dr. Thomson, in Kumaon, in May 1845, and I have named it after him. Dr. Hooker found it in the rivers of Sikkim, and in the Tambur River of East Nipal, growing among stones, from which it was difficult to extricate it. I am indebted to Mr. Nuttall for specimens found by Mr. Booth “above Gomeree in Bhootan.”

It is remarkable for the number of its spiculæ, and for the ferruginous spots or lines, most copious on the perigynia, but visible on the scales, leaves and their vaginae, and bracts. The culm is covered by the sheathing leaves almost to the base of the spike. It is allied to *C. nubigena*, Don, in the nervation of the perigynia, and its foliaceous bracts.

2. *C. nubigena* (Don); spica ovata oblonga vel cylindrica pallida, e spiculis 5–12 pluribusve ovatis sessilibus androgynis apice masculis, superioribus congestis nudis, inferioribus sæpe compositis subremotis longe bracteatis; stigmatibus 2–3; perigyniis lanceolatis vel ovatis sensim in rostrum acuminatis bifidis margine obtusiusculis glabris, vel acutis plus minus serratis utrinque crebre nervatis pallidis interdum leviter ferrugineo-punctatis, squama oblongo-ovata acuta vel cuspidata albida nervo viridi vel pallide ferruginea margine hyalina subæquilata longioribus.—*C. nubigena*, Don, *Prod. Fl. Nepal.* 42! *Lin. Trans.* xiv. 326! (1825); Nees, *apud Wight, Contr.* 120; Kunth, *Cyp.* 385! (TAB. II.)

HAB. In montibus temperatis Indiæ totæ, alt. 6–12,000 ped. Zeylania, Gardner! Nilghiri, Wight! Khasia, Hooker! et Thomson! In Himalaya tota a Bhotan! ad Rajaori!

Culmus ½–1½-ped. vel altior, obtusangulus, lævis vel apice uno angulo (rarius omnibus) scabro. *Folia* lineam lata, sæpius conduplicata. *Bractæ* inferiores 2–4 elongatæ, spica longiores, infima interdum 9–10-poll. *Spica* ½–2½ poll. longa, 5 lin. lata. *Spiculae* omnes simplices, apice extremo parce masculæ, contiguae, vel inferiores sæpe compositæ, subremotæ. *Perigynium* 1½–2²/₁₀ lin. longum, 4/₁₀–8/₁₀ lin. latum. *Achenium* 6/₁₀–8/₁₀ lin. longum, 4/₁₀–6/₁₀ lin. latum, ovale vel suborbiculatum, lucidum, basi styli apiculatum (stig. 2), compressum, biconvexum (stig. 3), obtuse trigonum, faciebus convexis.

This species is common throughout India. Though normally with two stigmas, yet three are occasionally observable with a triangular achenium. It varies in the smoothness or roughness of the culm and margins of the perigynium even in the same specimen, but the ferruginous dots on the perigynium seem to be peculiar to certain localities. In the Ceylon, and in some of Dr. Hooker's specimens, the terminal spicula is sometimes sterile, or male. The nervation of the perigynium, long bracts, and involute leaves at once distinguish it from *C. foliosa*, Don; and the longer culm, shorter spike, fewer spiculæ, and more deeply bifid perigynium, with occasionally three stigmata and a triquetrous achenium, distinguish it from *C. Thomsoni*, which is also peculiar in its place of growth, being firmly attached by its ligneous rhizome to rocks in the bed of running streams.

3. *C. foliosa* (Don); spica oblonga vel cylindrica pal-

lida s^epe basi interrupta ramosa, e spiculis 12–30 pluribusve androgynis apice masculis, superioribus simplicibus congestis, inferioribus compositis subremotis s^epe in ramos 2–4 subpollicares insidentibus breve setaceo-bracteatis; stigmatibus 2; perigyniis ovalibus vel ovatis breve rostratis bifidis plano-convexis enerviis rarius nervatis, marginibus acutis inflexis superne serratis, pallide viridibus lucidis, squama ovata acuta vel cuspidata albida nervo viridi longioribus.—C. foliosa, Don, Prod. 42! Lin. Trans. xiv. 327! C. notoleia, Nees, 121! Kunth, 388. (TAB. III.)

HAB. In montibus temperatis Indiæ totæ, alt. 4–9000 ped. Nilghiri, Wight! Khasia, Hooker! et Thomson! et Himalaya tota a Sikkim! ad Kashmir!

Culmus $\frac{1}{2}$ – $2\frac{1}{2}$ -ped., acutangulus, apice scaber, basi foliosus. *Folia* $1\frac{1}{2}$ – $2\frac{1}{2}$ lin. lata, culmo longiora, plana, graminea. *Bracteæ* setaceæ, breves: inferiores rarius spiculis vel ramis longiores. *Spica* 1– $3\frac{1}{2}$ poll. longa, 4–6 lin. lata. *Spiculae* parvæ, ovatæ, sessiles, omnes contiguæ vel inferiores subremotæ; rami s^epe pollicares, infimus rare $1\frac{1}{2}$ poll. remotus bracteâque ramo longiori suffultus. *Perigynium* $1\frac{5}{6}$ – $1\frac{8}{6}$ lin. longum, $\frac{6}{6}$ – $\frac{8}{6}$ lin. latum. *Achenium* $\frac{8}{6}$ lin. longum, $\frac{7}{6}$ lin. latum, stipitatum, lenticulare, pallide castaneum, basi styli clavata decidua.

Variat rarius in speciminibus quibusdam Royleanis perigyniis dorso trinervibus; in Thomsonianis utrinque 3–6-nervatis.

Diffr. a C. nubigena culmo acutangulo scabriori, foliis planis gramineis, perigyniis brevius rostratis enerviis vel rarius parce nervatis, bracteis brevibus setaceis;

A C. divulsa, Good., vix, nisi culmo s^epe altiori validiori, spiculis pluribus magis confertis, foliis latioribus, distincta. In omnibus notis gravibus culmo acutangulo, spica simplici vel ramosa, perigyniis adpresso-erectis plerumque enerviis vel parce nervatis, bracteis setaceis brevibus rarius elongatis, certe congruunt.

Nees, under C. notoleia, quotes Wall. 3387 (*ex parte*), and describes the spike as “*basi subinterrupta*;” and under C. foliosa, Don, for which he also quotes Wallich, *without any number*, and of which therefore he probably had no specimen from him, “*spiculis approximatis, inferioribus remotiusculis*.” Nees also quotes Royle under C. foliosa, without giving, as is usual with him, any number attached to the specimen; and as he adds, “*An C. vulpina forma?*” I do not quote his C. foliosa as a synonym to C. foliosa, Don. The specimen he had before him was one, I suspect, from Herb. Royle, and which he referred to the C. foliosa, Don, having no authentic specimen of that plant from Herb. Wallich to compare with it. I have a specimen from Royle, which is too young for a satisfactory opinion about it, but which I believe to be the C. vulpina of Europe, and I was told by Dr. Royle that he had received European plants which occasionally had been mixed with his Indian ones. As no other collector in India has met with a similar specimen, I suspect the one in question was from Europe, and is what Nees refers to under his C. foliosa. I suspect the Indian C. foliosa will be found inseparable from the European C. divulsa, which Ledebour finds in the Altai. Both he and Anderson notice the roughness on the margins of the perigynium, the absence of which Nees makes use of as a character distinguishing C. divulsa from his C. notoleia.

I have not seen any specimens of this plant from Ceylon.

4. C. Walkeri (Arnott); spica purpurea elongata, e spiculis plurimis plerumque androgynis apice masculis gracilibus inæqualibus laxifloris erectis vel nutantibus fasciculatis decomposita; fasciculis 6, inferioribus longe exserte pedunculatis bracteatisque, e pedunculis 4–12 longis capillaceis simplicibus vel 2–3 spiculiferis compo-

sitis; stigmatibus 3 longis; perigyniis elongatis anguste lanceolatis longe rostratis bicupidatis triquetris nervatis superne margine serratis demum alternatim dissitis, squama lanceolata obtusa aristata purpurea margine albo-hyalina longioribus.—C. Walkeri, Arnott MSS. in Herb.! Boott, Lin. Trans. xx. 129 (1846). (TAB. IV.)

HAB. In Zeylania, Walker! Gardner, 942, Herb. Heward!

Culmus sub-3-pedalis, triqueter, rigidus, laevis, apice gracilis, scabriuscus, basi foliis vestientibus purpureis teetus; pars fasciculos gerens sesquipedalis. *Folia* 3–4 lin. lata, culmum subæquantia. *Bracteæ* vaginatae, inferiores 2 lin. latæ, culmo breviores. *Vaginæ* inferiores 1– $1\frac{1}{2}$ -poll., superiores 3–5 lin. longæ, 1–2 lin. longæ, purpureæ. *Spiculæ* 1– $2\frac{1}{2}$ poll. longæ, 1–2 lin. latæ, s^epius androgynæ, apice plus minus masculæ, quædam (*summæ*) omnino vel fere tote masculæ, aliæ (*inter minores*) foemineæ, basi demum alternatim dissitifloræ. *Pedunculi* capillacei, scabri. *Squamæ* omnes longe aristatae, conformes, masculæ imbricatae. *Perigynium* $3\frac{1}{2}$ lin. longum, $\frac{4}{6}$ lin. latum, viride, superne purpuratum, leviter nervatum. *Achenium* stipitatum, $1\frac{8}{6}$ lin. longum, $\frac{4}{6}$ lin. latum, linearitriquetrum, pallide ferrugineum, basi styli apiculatum.

I first met with this species in Herb. Arnott, under the MS. name which it bears, and described it in the twentieth volume of the Linnean Transactions. I have since been indebted to Mr. Heward for a specimen collected by the late Mr. Gardner in Ceylon. It is apparently confined to that island.

5. C. curvata (Boott); spica oblonga pallide castanea, e spiculis 5–7 androgynis apice masculis simplicibus vel inferioribus compositis, superioribus ovatis congestis, reliquis oblongis subremotis longe foliaceo-bracteatis; stigmatibus 3; perigyniis (immaturis) oblongo-ovalibus, ore hyalino obliquo, castaneis nervis marginalibus viridibus s^epe apice ad margines parce denticulatis lucidis, squama ovata acuta pallide castanea margine hyalina longioribus. (TAB. V.)

HAB. In Himalaya orientali alpina ad Sikkim, alt. 12–14,000 ped. (graminosis), J. D. Hooker!

Cæspitosa. *Culmus* 3–5-poll., laevis, obtusangulus, curvatus. *Folia* conduplicata, filiformia, seabra, culmo longiora, curvata. *Bracteæ* inferiores culmo longiores. *Spica* sesquipollucaris. *Spiculae* 2–6 lin. longæ, $\frac{1}{2}$ –2 lin. latæ, apice parce masculæ. *Perigynium* $1\frac{3}{6}$ lin. longum, $\frac{4}{6}$ – $\frac{1}{2}$ lin. latum. *Achenium* $\frac{8}{6}$ lin. longum, $\frac{4}{6}$ lin. latum, oblongo-ovale, triquetrum, basi styli crassiore decidua stipitatum, postice racheolâ ligulatâ nervosâ margine serratâ viridi, interdum cxsertâ, præditum.

I know of no near affinity with this species. The racheola sometimes ruptures the perigynium, and in one instance I have observed an exserted axis supporting a perigynium with its scale. This tendency to composition is more frequent than has been generally supposed, and though perhaps the presence of a simple racheola is more commonly met with in the *Psyllophoræ* than any other group, I have noticed it in so many others that I suspect it is by no means uncommon. It may easily be overlooked, as where found it is not always present in every perigynium.

Drejer says that the *Psyllophoræ* “manifesto considerandæ sunt, ut formæ hebetatæ Caricum genuinarum,” and independent of the analogous forms of their perigynia, upon which he grounds the remark, I think the frequency of the racheola in them may tend to confirm it.

6. C. setigera, β , minor (Don); spicis 3–6, masculis 1–2 sessilibus, foemineis 3–4 abbreviatis vel oblongis densifloris, superioribus apice masculis sessilibus, inferioribus plus minus exserte pedunculatis, omnibus bracteatis

contiguis vel infima remota subradicali; stigmatibus 3; perigyniis obovatis vel ovalibus rostratis, ore membranaceo oblique fisco demum bidentato vel bifido, obtuse triquetris enerviis scaberrimis ciliatis pallide-olivaceis, squamam oblongam sensim vel abrupte acuminatam vel ovatam vel obovatam obtusam hispido-aristatam castaneam medio basique pallidam margine vix vel late albo-membranaceam demum decolorem subæquantibus.—*C. setigera*, Don, Prod. 43! Lin. Trans. xiv. 330; Nees, 126! Kunth, 515; Drejer, Symb. 20. t. 8. *C. hymenolepis*, Nees, 126! Kunth, 50. (TAB. VI.)

HAB. α , in Himalaya centrali et occidentali temperata a Nipal, Wallich (n. 3385)! ad Kashmir, alt. 6-8000 ped., Thomson! β , in Himalaya orientali temperata ad Nipal et Sikkim, alt. 7-12,000 ped., J. D. Hooker, etc.

Culmus 2½-12 poll. altus, laevis, basi vaginis ferrugineis reticulato-fibrosis tectus; pars spicas gerens ½-6 poll. longa. *Folia* ½-1½ lin. lata, culmo longiora, marginibus revoluta. *Bractæ inferiores* vaginatae, omnes culmo (sæpe multum) longiores. *Vaginæ* 1-6 lin. longæ. *Spicæ masculæ* 2 lin. ad pollicem longæ, sessiles. *Squamæ* acutæ vcl obtusæ, cuspidatae. *Spicæ femineæ* 2-12 lin. longæ, 1-2 lin. latae: superiores (vel suprema solum) parce apice masculæ, sessiles: inferiores exserte pedunculatae: omnes simplices, congestæ vel approximatæ, vcl inferiores basi ramulis 1-2 brevibus composite, infima interdum subradicalis simplex. *Squamæ* oblongolanceolatae, acutæ, obtusæ, sensim vcl abrupte acuminatae, plus minus longe aristatae, castaneæ, dcmum omnino decolorantes. *Perigynium* $\frac{9}{10}$ -1 $\frac{3}{10}$ lin. longum, $\frac{4}{10}$ - $\frac{6}{10}$ lin. latum. *Achenium* $\frac{6}{10}$ - $\frac{7}{10}$ lin. longum, $\frac{4}{10}$ - $\frac{5}{10}$ lin. latum, suborbiculato-triquetrum vel ellipticum, fuscum, punctulatum, basi styli obliqua vel recta apiculatum, stipitatum.

In the 'Symbolæ Caricologicae' of Drejer, edited by the Danish Academy in 1844, after the death of that excellent observer, there is a figure of *C. setigera*, Don (t. 8. p. 20), from a specimen sent by Wallich to Hornemann, apparently from an immature plant. Drejer remarks that it varies "squamis longius breviusve aristatis; spicis longioribus brevioribusque, pluribus paucioribusque, omnibus pedunculatis et nonnisi infima pedunculata, valde approximatis et remotis non contiguis, supremis masculis, inferioribus androgynis, apice masculis et summis mere masculis, mediis androgynis, infimis mere femineis: variat porro statura humili, tenella et elata, robusta, spicis densioribus et gracilioribus, squamis femineis hyalino-albidis et fuscis, quare subduplici forma forsitan proponenda:

" α , *hymenolepis*; spicis tenuioribus et gracilioribus, squamis hyalino-albidis.—*C. hymenolepis*, Nees.

" β , *chroolepis*; spicis densioribus, squamis intensius pallidiusve castaneo-fuscis.—*C. setigera*, Don."

From an original specimen of *C. setigera*, given to me many years ago by Mr. Don, it is evident that the distinction here proposed by Drejer will not apply to it and to other specimens since brought from the East Indies; and Drejer himself had doubts on the subject, for he remarks, "Nees indicat *C. hymenolepis* *setigera* affinem esse sed majorem et spicis albis distinctam. Sed in herbario Hornemann adsunt specimina *C. setigera*, a Wallichio missa, quæ etiam robustiora sunt quam *C. hymenolepis* specimina authentica et saltem non humiliora. Ex sex speciminiis non nisi duo habebant squamas albas, cætera squamas castaneo-fuscas, et ex his rursus unum in omnibus cæteris formæ albæ simillimum fuit."

The difference in the colour of the scales depends, I think, merely on age, and is observable in the typical form and in the variety β . Judging from the collections I have seen, the typical form is more rare than the variety β . Of this last, I have figured the two most common forms,—the one tall and gracile, the other short, with densely-flowered, contiguous spikes. In the typical form the orifice of the perigynium is conspicuously membranous

and obliquely cut. Drejer describes it, "ore hyalino bilobo, lobulis interdum in setulas tenerimas productis." In the variety β it varies, sometimes distinctly membranous, more or less oblique, emarginate-bidentate or bifid. In Dr. Hooker's specimens (t. 6. 2), which are not mature, it is emarginate, or almost entire, while in Dr. Thomson's (t. 6. 1) it is deeply bifid. I believe this to depend on the marginal nerves, in the short rostrum, extending to, or, in the longer rostrum, stopping short of the orifice, and the more or less shrinking of the membranous portion. I have not observed any other characters to separate these forms. The scales vary in form, and though almost glabrous, yet rarely the medial nerve is scabrous, and the limb near it slightly hairy. The bracts vary much in length, sometimes very much longer than the culm or only equalling it. In a few cases I have observed the terminal or all the spikes androgynous-male at top. The fasciculate form has only been observed by Strachey and Winterbottom in a young state.

7. *C. spiculata* (Boott); spicis 4-5 simplicibus cylindricis erectis pallidis apice quasi caudatis masculis, superioribus approximatis sessilibus, inferioribus subremotis exserte pedunculatis bracteatis; stigmatibus 3; perigyniis ellipticis acute triquetris sensim rostratis bidentatis basi productis valide nervatis glabris superne ad margines serratis, squama lanceolata acuminata vel hispido-cuspidata pallida latioribus eamque subæquantibus.—*C. spiculata*, Boott, Lin. Trans. xx. 139. (TAB. VII.)

β ; spicis pluribus, inferioribus compositis, perigyniis scabriusculis.

HAB. In regionibus subtropicis Mont. Khasiae, alt. 3-4000 ped., Griffith! Hooker et Thomson!

Culmus bipedalis, firmus, laevis, inter spicas scaber, basi reliquis foliorum lacratis vaginisque reticulato-fissis rubropurpuris tectus. *Folia* 1-2 lin. lata, plana, culmo longiora. *Bractæ inferiores* foliaceæ, culmo longiores, vaginatae: superiores setaceæ, spicis suis breviores. *Spicæ* 1-1½ poll. longæ, 2-3 lin. latae, subæquales, omnes apice masculæ. *Squamæ* lanceolatae, acuminatae, cuspidatae, glabreæ. *Perigynium* 1 $\frac{8}{10}$ -2 lin. longum, $\frac{6}{10}$ lin. latum, rostro sæpe $\frac{4}{10}$ lin. longo. *Achenium* 1 $\frac{4}{10}$ lin. longum, $\frac{3}{10}$ lin. latum, ellipticum, triquetrum, faciebus concaviusculis angulis concoloribus, basi styli recta apiculatum.

β . *C. composita* affinis, tamen perigyniis longioribus acute triquetris rostro longiori valide nervatis minus scabris pallidis, squamis angustioribus, achenio elliptico basi styli recta differt.

8. *C. composita* (Boott); spicis 7-12 inæqualibus cylindricis oblongisque purpureis apice caudato masculis, superioribus simplicibus sessilibus contiguis, inferioribus remotis inserte vcl exserte pedunculatis compositis, e spiculis 2-7 apice pedunculorum insidentibus longe bracteatis; stigmatibus 3; perigyniis orbiculatis ovalibus vel obovatis compressis demum subtriquetris abrupte brevirostratis bifidis enerviis vel plus minus obsolete nervatis scaberrimis margine serratis pallidis purpureo-tinctis, squama ovata vel lanceolata acuminata longe cuspidata dorso scabra purpurea medio late pallida margine anguste albo-membranacea subæquilata brevioribus. (TAB. VIII.)

HAB. In Assam, Major Jenkins! (Herb. Hooker); et in regionibus subtropicis et temperatis Khasiae, alt. 4-6000 ped., Hooker et Thomson!

Culmus sub-3-pedalis, rigidus, obtusangulus, laevis, superne gracilis, scaber, basi vaginis foliorum reticulato-fissis pallidis tectus; pars spicas gerens subpedalis. *Folia* 1-2 lin. lata, firma, culmo longiora, basi involuta, superne marginibus revo-

lutis. *Bracteæ* inferiores culmo multum longiores, vaginatae: superiores setaceæ, spicis suis breviores. *Spicæ* superiores 5–7, simplices, sessiles: inferiores 3–5, compositæ, inserte vel exserte pedunculatæ: infima rarius simplex. *Spiculæ* inæquales, 6 lin. ad 2 poll. longæ, 2–3 lin. latæ, apice subdimidiatum masculæ. *Squamæ* dorso scabré, conformes. *Perigynium* 1 $\frac{8}{10}$ lin. longam, $\frac{7}{10}$ lin. latum. *Achenium* $\frac{6}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, orbiculato-triquetrum, stipitatum, basi styli obliqua apiculatum.

I first saw specimens of *C. spiculata* in the herbarium of my late esteemed friend, Dr. Charles Lemann, gathered by Mr. Griffith on the mountains of Khasia, which I described in vol. xx. of the Transactions of the Linnean Society, and which are figured in t. 7. In 1851, Sir W. J. Hooker sent me a *Carex*, gathered in Assam by Major Jenkins, which I named in his Herbarium *C. composita*. Dr. Hooker has since brought from the East Indies specimens of both plants, and those which I have referred to a variety of *C. spiculata*, with the lower spikes compound, certainly approximate in inflorescence to *C. composita*; but as I find in that variety the perigynia are always strongly nerved, the scales pale, lanceolate, and narrower than the perigynium, and the achénium elliptic and more finely pitted than in *C. composita*, I am inclined to consider them distinct from that species. The form of the perigynium of *C. composita* varies: it is shorter than that of *C. spiculata*, less attenuate at base, at first compressed, orbicular, oval, or obovate, abruptly rostrate, with two prominent marginal nerves only, and its subtriangular form is dependent on the maturation of the achénium, which laterally it does not invest so closely as the perigynium of *C. spiculata* does its achénium. The more or less distinct nervation is only observable upon a few perigynia in the Khasia specimens.

9. *C. nobilis* (Boott); spica elongata, e spicis partialibus sub-12 decomposita, superioribus 4 simplicibus sessilibus contiguis, reliquis deorsum magis magisque compositis quarum superioribus 3–4 spiculiferis sessilibus evaginatis, inferioribus subremotis exserte pedunculatis longissime bracteatis elongatis (ambitu lanceolato) e spiculis 8–12 summis vcl omnibus simplicibus vel infimis binis ternis quinatisve compositis; spiculis erectis crassis densifloris sessilibus omnibus apice masculis inæqualibus olivaceis vel pallide ferrugineis; stigmatibus 3; perigyniis acute triquetris ellipticis basi spongiosis demum attenuatis rostratis rostro recto acute bifidis superne scabriuscis marginaque ciliato-serratis nervatis pallidis erectis, squama lanceolata acuta breve hispido-aristata pallida vel pallide ferruginea apice marginibus hyalino-albida dorso scabriuscula brevioribus vel eam æquantibus. (TAB. IX.)

HAB. In regionibus subtropicis Mont. Khasiæ, alt. 4–5000 ped., *Hooker et Thomson*.

Culmus 3-pedalis, validus, inter spicas gracilis, scabriusculus; pars spicas gressens 15–20 poll. longa. *Folia* 5 lin. lata, culmo longiora. *Bractea* infima 4 lin. lata, inferiores culmo longiores: superiores angustæ: summæ squamæformes. *Spicæ* partiales inferiores compositæ, 3–5 poll. longæ, 8 lin. latæ. *Spiculæ* 8 lin. ad 2 poll. longæ, basi 3 lin. latæ; pars staminifera 2–8 lin. longa. *Perigynium* 1 $\frac{5}{10}$ – $\frac{7}{10}$ lin. longum, $\frac{5}{10}$ – $\frac{6}{10}$ lin. latum, nervis concoloribus, saepe superne evanidis. *Achenium* 1 $\frac{1}{10}$ lin. longum, $\frac{4}{10}$ lin. latum, oblongo-obovatum, stipitatum, fuscum, punctulatum, angulis obtusis concoloribus faciebus concaviusculis basi styli persistente apiculatum.

Var. β ; spica supradecomposita, spiculis plurimis brevioribus hic illic omnino masculis vel sterilibus; perigyniis glabrioribus, rostro recurvo, laciniis minus acutis, apice ferrugineis vel ferrugineo-maculatis divaricatis; squamis latioribus, achenio breviori, angulis pallidis. (TAB. X.)

Var. γ ; spica plus plusque supradecomposita, spicis partibus inferioribus ramosis, spiculis innumerabilibus omnibus apice masculis; perigyniis scabris pallidis, vel apice ferrugineis vel ferrugineo-maculatis, rectis vel recurvis; squamis obtusis dorso scabris longe hispido-aristatis.—*Folia* latiora. (TAB. XI.)

I was, on the first examination of Dr. Hooker's fine collection of *Carices* from his journey to the East Indies, inclined to consider the varieties β and γ as a distinct species, and specimens may have been distributed by him under the name of *C. pandata*, but on a closer examination I can see nothing to justify it. The apparent distinction in the form of the perigynium in Tab. XI. is the result of age, from the spongy part eventually contracting and giving an attenuate form to the base of the perigynium. I can place no reliance on the scales, either as to form or the length of the arista. The specimen from which the lower partial spike is figured in Tab. XI. was much more compound than the others, a difference always remarkable in the panicle *Carices* of the East, dependent on luxuriance of growth, either from soil, or locality, or perhaps the age of the plant, the older root being more vigorous and profuse in its developments than younger seedling plants.

C. nobilis is very closely related to *C. myosurus*, a species however which maintains its gracile character in the wide range over which it is diffused, from the peninsula of India, where it has been found at Courtallum, on the Pulney Mountains, and the Nilghiries by Dr. Wight, to the mountains of Nipal, Khasia, Simla, and the Sikkim-Himalaya, whence it has been brought by Dr. Wallich, Mr. Griffith, Mr. Edgeworth, and Dr. Hooker. It was found also by Dr. Royle at Moossoree. The affinity is so close that it is difficult to find any distinguishing character beyond the more gracile curved form of the spiculæ, the looser cernuous inflorescence, and the quadrifarious arrangement of the perigynia in *C. myosurus*.

10. *C. polycephala* (Boott); spica pallide straminea concolori, e spiculis plurimis inæqualibus oblongis androgynis apice parce masculis fasciculatis decomposita; fasciculis 4–5, superioribus plerumque simplicibus contiguis, inferioribus e pedunculis monostachyis aliisque superne fasciculatis vaginulatis bracteolatis simplicibus vel racemosis inæqualiter longe exserte pedunculatis foliaceo-bracteatis compositis; stigmatibus 3; perigyniis triquetris ovalibus longe subulato-rostratis ore membranaceo bilobo demum fisso nervatis oblique divergentibus, squama lanceolata acuminata acuta pallida angustioribus brevioribus vel æquantibus. (TAB. XII.)

HAB. In Himalaya orientali ad Sikkim, alt. 10,000 ped., in graminosis, *J. D. Hooker*.

Culmus scsquipedalis, validus, laevis, basi foliis vestientibus tectus; pars spicas gerens pedalis. *Folia* 4–5 lin. lata, rigida, culmo longiora. *Bracteæ* culmo longiores: infima 4 lin. lata, vaginata: summæ setaceæ. *Vagina* infima 1 $\frac{1}{2}$ poll. longa. *Pedunculi* inæquales, graciles. *Pedicelli* setacci. *Fasciculi* supremi e spiculis simplicibus exserte pedunculatis: reliqui e spiculis simplicibus pedunculatis superne ramosis, 2–8 spiculiferis compositi; infimus, inter alios, uno pedunculo longiore fasciculato bracteolato instructus. *Spiculæ* inæquales, $\frac{1}{2}$ –1 poll. longæ, 3–4 lin. latæ, omnes apice parce masculæ, pallide stramineæ, concolores, laxæ. *Squamæ* omnes conformes. *Perigynium* 1 $\frac{8}{10}$ – $\frac{2}{10}$ lin. longum, $\frac{4}{10}$ – $\frac{5}{10}$ lin. latum, olivaceum, rostro prælongo laevi pallido. *Achenium* $\frac{8}{10}$ lin. longum, $\frac{4}{10}$ lin. latum, triquetrum, ovale, fusco-olivaceum, punctulatum, basi styli obliqua apiculatum stipitatum.

11. *C. pulchra* (Boott); spica castanca, e spiculis plurimis inæqualibus cylindricis gracilibus laxifloris erectis fasciculatis decomposita; fasciculis 4–6, superioribus approximatis inserte inferioribus exserte pedunculatis brac-

teatis, e pedunculis 5–10 simplicibus vel uno 2–5-spiculifero compositis; spiculis linearibus, una (*altiori*) in quoque fasciculo basi mascula vel in summo interdum omnino mascula; stigmatibus 3; perigyniis parvis ovalibus triquetris rostratis, ore albo-hyalino obliquo, enerviis castaneis nitidis glabris, squama ovata obtusa vel acuta castanea apice hyalina longioribus. (TAB. XIII.)

HAB. In Himalaya orientali temperata, ad Sikkim et Nipal, alt. 7–11,000 ped., J. D. Hooker.

Culmus $\frac{1}{2}$ –1-ped., gracilis, firmus, obtusangulus, laevis, basi foliatus; pars spicas gerens 4–7-poll. *Folia* $\frac{1}{2}$ –1 lin. lata, culmo breviora, firma, plana. *Bracteæ* inferiores culmo breviores vel longiores, supremæ subulatae, omnes vaginatae. *Vagina* infima 3–10 lin. longa. *Pedunculi* inæquales: summi vix lineam, inferiores 1–3 poll. longi, setacei, laeves: plerumque monostachyi, vel unus 2–5-spiculifer. *Spiculae* 3–15 lin. longæ, lineam latæ; una rarius altera in quoque fasciculo basi mascula, vel *terminalis* interdum omnino mascula. *Perigynium* 1–1 $\frac{2}{10}$ lin. longum, $\frac{3}{10}$ lin. latum. *Achenium* $\frac{5}{10}$ – $\frac{6}{10}$ lin. longum, vix $\frac{3}{10}$ lin. latum, ovale, triquetrum, stipitatum, basi styli apiculatum.

This pretty species, found by Dr. Hooker at Lachen, varies in what may be considered the terminal spicula of the fascicles. It is generally androgynous, male at base; but in the highest fascicle it is often entirely male. The perigynium figured is one of a paler colour than usual, with ferruginous spots, but these generally coalesce, giving it a uniform ferruginous or castaneous colour, except at the orifice, which is white and membranous. In some specimens the fascicles consist of monostachyous peduncles, in others there is one supporting two to five spiculae, one or sometimes two of them being male at base.

12. *C. insignis* (Boott); spica castaneo-purpurea elongata, e spiculis plurimis inæqualibus cylindricis gracilibus androgynis apice masculis fœmineisque fasciculatis decomposita; fasciculis pluribus sub-12, summis e spiculis 2–3 simplicibus sessilibus, reliquis plerumque inserte pedunculatis longe bracteatis, e pedunculis 3–6 pluribusve simplicibus racemisque 2–6-spiculiferis compositis; spiculis linearibus laxifloris plus minus apice masculis fœmineisque; stigmatibus 3; perigyniis triquetris ovalibus rostratis, ore membranaceo obliquo, scabris margine serratis pallidis saepe ferrugineo-punctatis demum subexcurvis, nervis marginalibus, squama oblonga obtusa vel emarginata hispido-cuspidata purpurea nervo viridi apice albo-hyalina longioribus. (TAB. XIV.)

HAB. In Himalaya orientali temperata et subtropica: Nipal, alt. 5–6000 ped., J. D. Hooker, et in montibus Khasia, alt. 4–6000 ped., Hooker et Thomson.

E vaginis (infimis rubro-purpureis) foliorum culmum e basi ad apicem cooperientibus insignis! *Culmus* foliosus, 4-ped. vel altior, firmus; pars fasciculos gerens 12–15-poll. *Folia* 3–3 $\frac{1}{2}$ lin. lata, culmo breviora, plana, rigida, apice attenuata, scaberrima, supra granulato-asperata, alternatim vaginantia. *Bracteæ* conformes: superiores culmum æquantes: summæ setaceæ. *Spiculae* $\frac{1}{2}$ –1 $\frac{1}{2}$ poll. longæ; basis fœminea, 2 lin. lata; apex masculus, $\frac{1}{2}$ lin. latus, 3–15 lin. longus. In quoque fasciculo *racemi* 1–3, exserte vel inserte pedunculati, 2–6-spiculiferi, erecti: spiculis superioribus racemorum subsessilibus; inferioribus quandoque geminatis, e vaginula purpurea euspidata egredientibus. *Squamæ* fœmineæ demum deciduae: masculæ pallidiores, imbricatae, persistentes. *Perigynium* 1 $\frac{8}{10}$ lin. longum, $\frac{6}{10}$ lin. latum, pallidum, plus minus ferrugineo-punctatum, demum olivaceo-fuscum, scabrum, enerve vel 2–3-ner-

vatum, nervis plus minus apice evanidis. *Achenium* lineam longum, $\frac{6}{10}$ lin. latum, triquetro-ovatum, stipitatum, fuscum, angulis pallidioribus, punctulatum.

The remarkable foliation of this species, like that of *C. ligulata*, distinguishes it from its allies. The perigynium varies in its nervation and roughness. I believe normally, with the exception of the marginal nerves, it is nerveless, though occasionally two or three are observable, more or less extending upwards. The roughness varies, and in an Assam specimen in Herb. Hooker is absent. In the fascicles there is a large proportion of female spiculae, and the male apex is variable in its proportion to the whole spicula, sometimes in the terminal ones having only one or two female flowers at base. In the older specimens the female scales and perigynia have fallen, and the male apex alone remains.

13. *C. decora* (Boott); spica obscure purpurea elongata, e spiculis plurimis masculis androgynisque apice masculis rarissimis omnino fœmineis gracilibus laxifloris elongatis inæqualibus erectis vel nutantibus fasciculatis decomposita; fasciculis 6–8, inferioribus longe exserte pedunculatis bracteatis, e pedunculis 2–8 longis inæqualibus plerumque monostachyis, uno longiori spiculas masculas 1–4 apice gerente, compositis; stigmatibus 3; perigyniis elongatis triquetris ellipticis basi attenuatis longe rostratis, ore hyalino obliquo ciliato margine incurvo superne scabro, leviter striato-nervatis fusco-olivaceis superne ferrugineo-punctatis, squama oblonga obtusa emarginata hispido-cuspidata rarius mutica obscure purpurea superne pallida vel albido-hyalina basi amplectente angustioribus longioribus vel subæquantibus. (TAB. XV.)

HAB. In Himalaya orientali temperata et subalpina, ad Sikkim, alt. 10–12,000 ped., J. D. Hooker.

Culmus 2-ped. vel altior, validus, triquierter, laevis; pars fasciculos gerens sesquipedalis. *Folia* 4–5 lin. lata, culmo longiora, tuberculato-asperata. *Bracteæ* inferiores 3 lin. latæ, vaginatae: vagina infima 2 $\frac{1}{2}$ poll. longa. *Fasciculi* 6–8, exteriore minores: supremi saepe e spiculis 2 geminatis simplicibus: medii e pedunculis 3–8, quorum longior ad apicem spiculas 1–4 plerumque masculas gerat; breviores monostachyi, spiculam apice masculam vel rarius fœmineam gerentes: infimus saepe e pedunculis 3–4; longioribus spiculas 3, masculas, brevioribus unam vel alteram apice masculam gerentibus. *Spiculae* 1–2 $\frac{1}{2}$ poll. longæ, 1–2 lin. latæ: terminales alternæ, interdum 2–6 omnino masculæ, sessiles. *Pedunculi* gracillimi, scabri, 3–6 poll. longi. *Squamæ* conformes, (sub lente) apice eiliolatae. *Perigynium* 3 lin. longum, $\frac{6}{10}$ lin. latum: nervis inconspicuis. *Achenium* 1 $\frac{2}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, triquetrum, oblongum, stipitatum, fuscum, basi styli apiculatum.

One of the most remarkable of the fascicled group discovered by Dr. Hooker in Sikkim. The colour of the spike is of a dull purple, variegated by the cream-coloured tips of the scales. The spiculae, from the long capillary peduncles, are often nodding.

14. *C. Daltoni* (Boott); spica ferruginea denum fusco-purpurea elongata, e spiculis permultis masculis androgynis apice masculis fœmineisque basi laxifloris cylindricis inæqualibus nutantibus fasciculatis decomposita; fasciculis 8–10, inferioribus magis compositis longissime exserte pedunculatis bracteatisque, e pedunculis 4–20 pluribusve monostachyis et pluristachyis compositis: in quoque fasciculo pedunculis 2–8, longioribus spiculas 2–10 superiores fere vel omnino masculas, aliis brevioribus 2–13 monostachyis spiculas apice masculas rarius fœmineas gerentibus; stigmatibus 3; perigyniis triquetris ellipticis rostratis bifidis atro-purpureis, rostro ferru-

gineo serrato, ore hyalino, basi attenuatis pallidis, strigoso-scaberrimis enerviis demum deciduis, squama oblonga amplectente obtusa truncata vcl emarginata vel acuta ferruginea margine albo-hyalina longe hispido-aristata decidua angustioribus brevioribus vel subæquantibus. (TAB. XVI.)

HAB. In Hinialaya orientali temperata, ad Sikkim, alt. 7-9000 ped., in graminosis, J. D. Hooker.

Culmus 3-pedalis vel altior, validus, obtusangulus, laevis; pars fasciculos gerens 1½-2½-ped. *Folia* desunt. *Bracteæ* inferiores 4-5 lin. latæ, eulmum subæquantes: superiores angustæ, fasciculos superantes. *Vagina* infima sub-2-poll., pallida: summæ 2-3 lin. longæ, purpureæ. *Pedunculi* 3-10-poll., longiores, superne spiculas 2-10 gerentes, nutantes, alii monostachyi, breviores, erecti: scabri. *Fasciculi* deorsum magis compositi: inferiores interdum e pedunculis 21 compositi, quorum 13 monostachyi; longioribus eorum spiculas apice masculas, brevioribus fœmineas gerentibus: et 8 (semper longioribus) 2-10-spiculiferis. *Spiculæ* inæquales, 7 lin.-2½ poll. longæ, apice 1 lin., basi 2 lin. latæ: summæ culmi (2-5) alternæ, contiguæ, sessiles, masculæ, quandoque etiam fasciculorum masculæ vel fcre omnino masculæ: aliæ *basi* fœmineis paucis laxis, *apice* masculis pluribus imbricatis vel fœmineis pluribus masculis paucis præditæ. In pedunculis magis polystachyis spiculæ summæ alternæ, sessiles, contiguæ, fere omnino vel una alterave tote masculæ, reliquo remotæ, geminatæ vcl ternatæ, longe exserte pedicellatae, e vaginula 2-3 lin. longa, purpurea, cuspidata egredientes. *Squamæ* omnes conformes: fœmineæ facile deciduæ. *Perigynium* 1-8 lin. longum, ½ lin. latum. *Achenium* 7 lin. longum, 4 lin. latum, triquetrum, oblongo-ovale, stipitatum, basi styli æquali apiculatum, pallide ferrugineum, punctulatum, angulis pallidioribus.

This species, I think the most beautiful of the genus, I have named after Dr. Hooker. It had been found in Bhotan by Griffith, as I learn by a small specimen in the Herbarium of Sir W. J. Hooker from him, with the number 2664. Nothing can exceed the elegance of the larger specimens, with their luxuriant nodding fascicles.

15. *C. cardiolepis* (Nees); spicis 3-4 oblongo-cylindraceis purpureis erectis, terminali mascula pedunculata, reliquis fœmineis sublaxifloris remotis exserte pedunculatis; bracteis subturgide vaginatis brachiphyllis; stigmatibus 3 longis; perigyniis triquetro-obovatis abrupte rostellatis, ore emarginato-obliquo, crebre valideque nervatis strigoso-scabris oblique stipitatis, squama oblonga late emarginata cuspidata purpurea margine late albo-hyalina angustioribus longioribusq.—*C. cardiolepis*, Nees, Wight, Contr. 127. (TAB. XVII.)

HAB. In Himalaya occidentali temperata, alt. 7-12,000 ped., a Kumaon, Royle, ad Kashmir, Thomson.

Cæspitosa. *Radix* lignosa, horizontalis. *Culmus* 1-1½-ped., graeilis, obtusangulus, sulcatus, scaber, basi foliatus vaginisque reticulato-fibrillosis reliquiisque foliorum fibratis nigrescentibus tectus; pars spicas gerens 4-6 poll. longa. *Folia* ½-1 lin. lata: *juniora* culmo breviora, plana, carinata, apice setaceo-attenuata, scabra, demum *senilia* arida, eulmo longiora. *Bracteæ* vaginatæ, spicis suis breviores vel inferior paulo longior. *Vaginae* 6-12 lin. longæ, apice albo-membranaceæ, subturgidæ. *Pedunculi* semivaginati, scabri. *Spicæ* 6-14 lin. longæ, 1½-2 lin. latæ: fœmineæ inter se 1½-3 poll. remotæ. *Squamæ* conformes: masculæ arcte imbricatae, infima amplectens, longius cuspidata: fœmineæ demum marginibus insigniter albo-membranaceæ: omnes late emarginatae,

Perigynium (cum stipite ¼ lin. longo) 1-8 lin. longum, 8 lin. latum, pallidum, apice purpureo-tinetum, stipite basi curvata. *Achenium* 1-4 lin. longum, 7 lin. latum, triquetro-obovatum, pallidum, apice zona circulari basin styli bulbosam cingente instructum.

Ab affinibus (inter *Digitatas*), squamis omnibus insigniter emarginatis, distincta.

16. *C. Wallichiana* (Prescott); spicis 4-6 rarius 3-8 erectis pallidis, masculis 3-2 rarius 1-4 vel 5 cylindricis, fœmineis 2-3 vel 1-4 oblongis vel cylindricis sæpe approximatis infima vel binis inferioribus vaginatis plus minus exserte pedunculatis, bracteis foliaceis sæpe culmo multum longioribus; stigmatibus 3; perigyniis ovatis vel oblongo-ovatis obtuse trigonis rostellatis breve bicuspidatis nervatis hispidis coriaceis subturgidis cinereis, squama ovato-lanceolata cuspidata pallide straminea latioribus brevioribus vel longioribus.—*C. Wallichiana*, Prescott! in Wall. Cat. n. 3380! Nees ap. Wight, 129! Kunth, 483. *C. Fedia*, Nees, l. c. 129! Kunth, 483; Royle, n. 114! (TAB. XVIII.)

HAB. In regionibus tropicis planitiei Gangeticæ, Punjab et Assam, et Himalayæ inferioris, alt. 1-5000 ped., Wallich, etc. Afghan, Griffith.

Radix repens. *Culmus* 1-2-ped., obtusangulus, laevis, rigidus, basi foliis vestientibus vaginisque reticulato-fissis glabris tectus; pars spicas gerens 4-12 poll. longa. *Folia* 1-2½ lin. lata, culmo longiora, supra scabrida. *Bracteæ* omnes interdum culmo longiores: infima quandoque sesquipedalis semper proximaque sæpe vaginata. *Vaginae* 2-18 lin. longæ. *Pedunculus* infimus 2 lin. ad 3 poll. longus, teres, laevis. *Spicæ* masculæ contiguæ (nunquam androgynæ), suprema 1½ poll. longa, 1½ lin. lata, extremæ majores, infima bracteata. *Squamæ* lanceolatae, acuminatae, cuspidatae vel obtusæ, muticæ, apice ciliatae. *Spicæ* fœmineæ ½-2½ poll. longæ, 3-3½ lin. latæ: suprema rarius apice mascula sessilis; reliquæ breve vel plus minus longe pedunculatae. *Perigynium* 2-2½ lin. longum, 9-1 lin. latum, breve bicuspidatum, laciniis latiusculis, ciliatis. *Achenium* 1-3 lin. longum, 7 lin. latum, ellipticum, stipitatum, basi styli persistente apiculatum.

Habitus et adspectus *C. lanuginosæ*, Mich. Differt culmo validiori, laevi, obtusangulo; bracteis sæpe longioribus, inferioribusque sæpius vaginatis; spicis pluribus; perigyniis minus hispidis, brevius bicuspidatis, laciniis latioribus; achenio elliptico; vaginis glabris.

I find in the specimens I have seen of this species that—

5 had 3 spikes.	17 had 1 male.	17 had 1 female.
41 „ 4	36 „ 2	61 „ 2
47 „ 5	62 „ 3	49 „ 3
33 „ 6	16 „ 4	7 „ 4
7 „ 7	3 „ 5	
1 „ 8		
—	134	134

The specimens which Nees had seen of Wallich's Herbarium were apparently young, and he was induced to consider Royle's as specifically distinct, but I can see nothing to justify the separation. He notices the very close affinity of his *C. Fedia* with *C. lanuginosa* (*C. pellita*, Muhl.). I have pointed out the few marks of distinction that I have observed. This species, Mr. Edgeworth says in a note, is the only one he had found in the plains of India towards the mountains: his specimens were from the Delhi canal. I have it from the Brahmaputra to Kashmir and Afghanistan, varying in size as it grows in water or more or less remote from it.

17. *C. Royleana* (Nees); spicis 3 vel 2-4 albo-viridibus oblongis laxifloris comosis, terminali mascula, reliquis

fœmineis sessilibus contiguis vel approximatis, infima subvaginata interdum radicali exserte pedunculata, bractea infima (nisi radicali) culmo plerumque paulo longiore; stigmatibus 3; perigyniis ovalibus utrinque acutis emarginatis nervatis puberulis pallide viridibus, squama oblonga truncata vel emarginata albida demum flavescente longe valideque ciliato-cuspidata brevioribus.—C. Royleana, Nees, Wight, Contr. 127! (1834); Kunth, 441. (TAB. XIX.)

HAB. In Himalaya occid. temperata, Royle, n. 152! Munro, n. 2428! Kumaon, alt. 7–8000 ped., Thomson!

Culmus 5–8-poll., basi foliatus, gracillimus, triqueter, scaber; pars spicas gerens 7–20 lin. vel 6 poll. longa. *Folia* plana, culmo breviora: vel *radicalia* latiora, 1½ lin. lata, graminea, eo longiora. *Bractea* infima brevissime vaginata, culmo longior vel brevior, quandoque radicalis longius vaginata, spicâ suâ longior. *Vagina* sublineam longa, vel radicalis 6 lin. longa. *Pedunculus* radicalis 1½ poll. longus, scaber. *Spicæ* omnes comosæ, contiguae vel alternae, 3–6 lin. longæ, 1½–2 lin. latæ: mascula sessilis vel pedunculata: fœminea infima quandoque subradicalis, longe exserte pedunculata. *Squamæ* omnes albidæ, demum flavescentes, longe valideque ciliato-cuspidatae: vel masculæ superiores acutæ: fœmineæ truncatae vel emarginatae, superiores subacutæ, omnes plus minus apice ciliatae. *Perigynium* 1–2 lin. longum, ½ lin. latum, achenium laxe vestiens. *Achenium* ½ lin. longum, ½ lin. latum, oblongo-triquetrum, apice quasi cyathiforme, margine basin incrassatum styli cingente: medio, c defectu albuminis, morbide indentatum.

This species has a very close affinity with *C. breviculmis*, Brown, of Australia and New Zealand, and with *C. leucochlora*, Bunge (Mem. St. Petersb. ii. 142, 1835), of China, and with *C. Langsdorffii*, Boott (Lin. Trans. xx. 144), of Japan, which is probably referable to Bunge's plant. A more intimate acquaintance with all these species may possibly prove their specific identity. *C. breviculmis* differs from *C. Royleana*, spicis fœmineis saepe apice masculis squamis masculis muticis, fœmineis brevius cuspidatis bracteis foliisque longioribus; *C. leucochlora* and *C. Langsdorffii*, squamis masculis saepe muticis, fœmineis plerumque acutis. The perigynium, achenium, and incrassate base of the style are alike in all.

18. *C. munda* (Boott); spicis 5–8 oblongis pallidis androgynis apice masculis basi laxiuscule (vel quibusdam omnino) fœmineis, superioribus sessilibus arcte contiguis, e perigyniis (*stigmata gerentibus*) egredientibus, inferioribus remotis longe exserte pedunculatis nutantibus, singulis interdum basi compositis, vel geminatis; stigmatibus 3; perigyniis triquetro-ovalibus utrinque attenuatis, rostro subexcurvo, ore subintegro albo-hyalino, enerviis tenuissime granulatis pallidis, squama obtusa saepe emarginata vel acuta mucronata vel mutica ferrugineo-tincta longioribus. (TAB. XX.)

β; minor, 2½ poll. alta, spicis 4 infimis geminatis.

HAB. In Himalaya orientali alpina ad Sikkim, alt. 10–14,000 ped., J. D. Hooker.

Culmus 1–1½-pedalis, triqueter, gracilis, scabriusculus, basi foliatus; pars spicas gerens 4–8 poll. longa. *Folia* 1–1½ lin. lata, graminea, plana, culmo breviora vel eum æquantia. *Bracteæ* inferiores foliaceæ, spicis suis longiores: summæ squamæformes. *Vaginae* 6 lin. ad 2 poll. longæ. *Pedunculi* inferiores 3–7 poll. longi, scabri, setacei: fascicularum paulo inæquales. *Spicæ* inæquales, 3–8 lin. longæ, basi 1½ lin. latæ, androgynæ, apice masculæ, et omnino fœmineæ: superiores singulæ, sessiles, evaginatae: terminalis apice dimidiatim mas-

cula, ad ejus basin 1–4 breviores sitæ, apice parce masculæ, vel fœminæ, e perigyniis (*stigmata gerentibus*) progredientes: reliquæ vel geminatae vel inferiores singulæ interdum basi spiculâ brcvi compositæ. In *fasciculis*, spica longior androgyna, apice mascula: altera *brevior* omnino fœminea. *Squamæ* masculæ ferrugineæ, demum pallidiores: fœminæ apice ferrugineæ, basi vel omnino pallidæ, inferiores plerumque mucronatae, saepc emarginatae. *Perigynium* 1½ lin. longum, ½ lin. latum, sublente tenuissime granulatum. *Achenium* ½ lin. longum, ½ lin. latum, triquetrum, stipitatum, pallidum, basi styli saepe obliqua apiculatum. *Racheola* filiformis, exscrta, rarius adest, rudimentum axis, quæ, in spicas aliquas, perigynia et squamas gerit.

The racheola occasionally observable within the perigynium escaped the notice of M. Maubert, and is not represented in the figure. Its nature is explained by the axis of a spike issuing from a fertile perigynium at y. It is probable that more luxuriant specimens of this pretty species would exhibit a more compound inflorescence, and thus more closely associate it in habit with the fascicled group so abundantly found in Sikkim by Dr. Hooker.

19. *C. fragilis* (Boott); spicis 4–7 linearibus pedunculatis ferrugineis androgynis apice masculis basi laxe alternatim (vel quibusdam omnino) fœmineis longissime exserte pedunculatis nutantibus remotis singulis vel *mediis* geminatis, bracteis spicas suas subæquantibus; stigmatibus 3; perigyniis (*floriferis*) lanceolatis rostratis bifidis excurvis viridibus, rostro castaneo, parce pubescens, squama lanceolata obtusa castanea medio pallida marginie albo-hyalina aristata (arista saepe infra apicem egrediente) longioribus. (TAB. XXI.)

HAB. In Himalaya orientali temperata ad Sikkim, alt. 10–11,000 ped., J. D. Hooker.

Culmus debilis, nutans, lœvis, basi foliatus; pars spicas gerens sesquipedalis. *Folia* 1–1½ lin. lata, mollia, plana. *Bracteæ* foliaceæ, longe vaginatae, superiores setaceæ. *Vaginae* inferiores 1½–3 poll. longæ. *Pedunculi* 2–7 pollices longi, setacei, superne scabri. *Spicæ* vel singulæ vel *mediae* geminatae, 5–14 lin. longæ, ½–1 lin. latæ, inæquales: terminales fere omnino masculæ, et in fasciculis *longior* saepe plus quam dimidiatim mascula: altera *brevior* omnino fœminæ. *Flores* fœminei 3–7 alterni: masculi primum laxe, demum imbricati. *Squamæ* conformes. *Perigynium* rostratum, ore subobliquo bifido, pubescens.

The terminal spikes in the central figure are represented as male, but they have two or three female florets at base. The specimens are too young to afford a satisfactory idea of the form of the perigynium. The general habit is that of *C. munda*, but the scabrous, bifid perigynia, long-peduncled spikes, etc., distinguish it from that species.

20. *C. macrogyna* (Turcz.); spicis 3–4 rarius 5–6 rubro-purpureis erectis ellipticis vel cylindraceis, summis arcte congestis sessilibus, terminalibus (1 rarius 2) masculis vel basi fœmineis, reliquis fœmineis vel superioribus (rarius omnibus) apice extremo masculis, inferioribus subremotis exserte vel inserte pedunculatis basi attenuatis, infima brevi foliaceo-bracteata rarius radicali longe pedunculata; stigmatibus 3 longis; perigyniis ellipticis erostratis vel rostellatis, ore hyalino truncato oblique fisso, plano-subtriquetris, superne scabris marginibusque serratis, purpureis basi pallidis antice nervatis nervis lateribus magis prominentibus, squama rotundata vel oblonga rubro-purpurea margine late albo-hyalina nervo pallido rarius extra apicem producto obtusissima angus-

tioribus longioribusque.—*C. macrogyna*, *Turezaninoff* (*Herb. Hooker!* et *Boott*). (TAB. XXII.)

HAB. In Tibetia occidentali alpina ad Nubra, alt. 15–17,000 ped., *Dr. Thomson*. “Ad Torrhentem Tessa,” *Turcz.*, *Herb. Hooker!* “In alpe ad torr. Dschylgyn, 1836,” *Turez.*, *Herb. Boott*!

Dense cæspitosa. *Radix* e fibris lignosis validis nigris composita. *Culmus* 12–16-poll., validus, rigidus, obtusangulus, lœvissimus, nudus, basi foliosus vaginisque marcidis reliquiisque foliorum tectus; pars spicas gerens 1½–3 poll. longa. *Folia* ½–2 lin. lata, culmo subdupo breviora, rigida, carinata, apic longe attenuata, curvata, pallide viridia, demum flavida. *Bractæ* 2, vaginatæ, culmo *semper*, spicis suis sæpe, breviores: infima sæpius solum subfoliacea: summæ squamæformes. *Vaginæ* 3–8 lin. longæ. *Pedunculi* 3–15 lin. longi, glabri. *Spica* terminalis 6–11 lin. longa, 1¼–2 lin. lata, sessilis vel pedunculata: reliquæ 2–3, rarius 1–5 fœmineæ: superiores sæpe abbreviatæ, sessiles, spica terminali arcte contiguæ: inferiorcs 6–13 lin. longæ, 2–2½ lin. latæ: infima 1–1½ poll. remota, rarius radicalis. *Squamæ* conformes, obtusissimæ. *Perigynium* 2½–3 lin. longum, 7–1 lin. latum, oblongo-ellipticum, sæpe in rostellum desinens, ore truncato albo-hyalino obliquo demum fisso, superne scabrum, marginibusque serratum basi glabrum, antice lœviter nervatum; nervis 2 lateralibus magis prominentibus. *Achenium* (cum stipite 4 lin. longo) 1½ lin. longum, 7 lin. latum, oblongo-triquetrum, angulis inæqualibus, basi styli persistente apiculatum, pallidum.

Affinis *C. sempervirenti*, *Vill.*, quæ differt spicis minoribus remotis, terminali semper mascula; squamis acutis; perigyniis longius rostratis; culmo gracili, superne scabro, inferne foliato; foliis planis gramineis, *sterilibus* longissimis.

A *C. hirtella*, *Drejer*, spica terminali sæpe basi fœminea, fœmineis 2–3 longioribus; squamis obtusis; vagina glabra; perigyniis brevioribus, rostellatis, ore truncato minus alte fisso; culmo rigido, crassiori, lœvissimo; foliis rigidis, latioribus, differt.

In a large suite of specimens in Dr. Thomson's collection I found—

48 spicis 3.	31 spica terminali mascula.
36 spicis 4.	42 spica terminali basi fœminea.
5 spicis 5.	8 spicis terminalibus 2 masculis.
1 spicis 6.	9 spicis terminalibus 2 basi fœmineis.

But it was difficult in some cases to determine whether the terminal spike was really *basi fœminea*, or whether the perigynia at its base did not properly belong to an abbreviated, very approximate, female spike. The perigynium figured is smaller and narrower than usual, and does not exhibit the rostellum or membranous orifice;—see that figured at Tab. XXXI. under the name of *C. obtusa*, as more correct. The bract at *i* is that of one of the upper spikes.

This species, with *C. hirtella*, *Drejer*, *C. tristis*, *Bieb.*, *C. haemastoma*, and *C. psychrophila*, *Nees*, etc., belong to the group *Ferrugineæ* of Tuckerman, and represent on the mountains of Northern India those analogous species found on the Alps of Europe. None have been brought from the Nilghiries.

In Arctic America we have *C. Franklinii*, *Boott*, *C. petricosa*, *Dewey* (of which we have no mature specimens), and *C. fuliginosa*, *St. and Hop.* In the United States the group has no representative, except the imperfectly known *C. juncea*, *Willd.*, found on the mountains of Carolina. I am not aware of any published description of *C. macrogyna*. I have copied the tickets affixed to authentic specimens in *Herb. Hooker*. My own specimen I received from M. Fischer, of Moscow.

21. *C. uncinoides* (*Boott*); spica oblonga castanea, e spiculis 6–8 androgynis apice parce masculis ellipticis contiguis composita, superioribus sessilibus, inferioribus basi attenuatis laxifloris remotiusculis, infima breve vel

(subradicali) longe pedunculata bracteata rarius basi composita; stigmatibus 3; perigyniis lanceolatis plano-triquetris, ore emarginato antice altius secto, superne scabriusculis, marginibus serratis, crebre leviter nervosis (racheola exserta) pallidis demum ferrugineis, squama lanceolata obtusa vel subacuta cuspidata amplectente castanea nervo pallide viridi angustioribus subæquantibus vel longioribus. (TAB. XXIII.)

HAB. In Himalaya orientali temperata, ad Sikkim, alt. 10–15,000 ped., *J. D. Hooker*.

Culmus 10–18-poll., validus, obtusangulus, lœvissimus, striatus, basi foliatus. *Folia* 1–2 lin. lata, culmo multum breviora, marginibus scabriusculis. *Bractæ* basi squamæformes, filiformes, spiculis suis breviores: infima amplectens vel (subradicalis) vaginata, breve foliacea. *Pedunculus* infimus 3–4 lin. vel rarius 4 poll. longus. *Spica* 1½–3½ poll. longa, 4–5 lin. lata. *Spiculae* 6–10 lin. longæ, 2–3 lin. latæ, apic parce masculæ, omnes contiguæ: inferiorcs remotiusculæ, vel infima interdum subradicalis: in uno specimine basi spiculis 3 parvis eompositæ. *Squamæ* conformes, castaneæ vel ferrugineæ: masculæ angustiores, sæpe inconspicuae. *Perigynium* 3½–4 lin. longum, 5–6 lin. latum. *Achenium* 2–2½ lin. longum, ½ lin. latum, triquetrum, antice sulcatum, basi styli incrassata apiculatum. *Racheola* 3½–5 lin. longa, ligulata, scrrata, pallida, apice appendice ferruginea, demum extra os perigynii exserta.

It is probable that the inflorescence of this remarkable species may hereafter be found to be more compound than in the specimens discovered by Dr. Hooker, judging from the occasional existence of the lower spicula with lateral branches, and from its subradical position. The existence of a racheola in it and in *C. curvata* is an exception among the androgynous group of the genus, and from its constancy in *C. uncinoides*, if it be the rudiment of an axis, may be found hereafter to be developed into one, though such development has not been observed in the species furnished with a similar organ, with which we have long been familiar, *C. microglochin*, *Wahl*.

22. *C. notha* (*Kunth*); spicis 4–8 atro- demum flavidio-purpureis subcontiguis clavatis cylindricisque, terminali mascula vel rarius basi mascula, reliquis fœmineis, superioribus subsessilibus, inferioribus pedunculatis bracteatis evaginatis erectis vel nutantibus basi attenuato-laxifloris; stigmatibus 2; perigyniis ovatis vel ellipticis basi productis rostratis, ore bidentato demum integro obliquo, plano-convexiusculis flavidis lineolis lucidis resinosis ferrugineis maculatis, antice 5- postice 2–3-nerviis, squama oblonga obtusa sæpe submarginata vel acuta mutica vel mucronulata purpurea nervo pallido latioribus longioribusque.—*C. notha*, *Kunth*, *Cyp.* 421. *C. punctata*, *Nees!* apud *Wight*, *Contr.* 127 (non *Gaudin*). *C. victorialis*, *Nees!*, l. e. 126; *Kunth*, 516. *C. Benthamiana*, *Boott*, *Royle*, *Illustr. (preface)*. *C. rostellata*, *Gay*, *MSS. in Herb. Jaquemont!* (TAB. XXIV.)

HAB. In Himalaya temperata: Kumaon, *Thomson*; Simla, *Edgeworth*; Sikkim, alt. 12,000 ped., *J. D. Hooker*. Urukta, *Royle*, n. 110. Rogee, in Kunawur, *Royle*, n. 125. Mauma, *Royle*, n. 145, (C. *victorialis*, *Nees*) Nohra, in Sirmoor, 9000 ped.; Karli, 5–8000 ped., *Edgeworth*. In ripas Pabnur fluminis, apud Chergaon, 5000 ped., *Munro*, n. 2432. In herbosis humidis: Chini, Kunawur, *Jaquemont*, n. 1345 (C. *rostellata*, *Gay*). Kumaon et Surliwal, alt. 6–9000 ped., *Thomson*, *Herb. Hooker*.

Culmus 9-poll. ad 2-ped., triquetus, firmus, angulis superne

scabriusculis, basi foliatus; pars spicas gerens 3½–5 poll. longa. *Folia* 1½–2½ lin. lata, culmo longiora, plana. *Bractea* infima foliacea, lin. lata, culmum subaequans vel eo longior vcl angusta spica sua brevior, reliquæ sursum breviores: summae squamæformes: omnes evaginatæ, vel infima rarius breve vaginans. *Pedunculus* infimus 1–1½-pollicaris. *Spicæ* primo atro-purpureæ, demum flavidо-tinctæ, omnes sæpe clavatæ, vel cylindricæ, terminalis et inferiores fœminearum solum basi attenuatæ. *Spica* terminalis mascula, rarius basi mascula, 17 lin. ad 2½ poll. longa, apice 2 lin. lata, breve pedunculata. *Spicæ* fœmineæ 1–3 poll. longæ, apice 2 lin. latae, a se 2–6 lin., vel inferiores interdum 10 lin. ad 1½ poll. remotæ. *Squamæ* conformes, masculæ, inferiores nervo pallido infra, vel in omnibus extra apicem breve producto; fœmineæ rarius muticæ. *Perigynium* 1½–1¾ lin. longum, ¼–¾ lin. latum, flavidum, lineolis ferrugincis crebre obsitum, ore sæpe purpureo bidentato demum integro subobliquo leviter nervatum. *Achenium* ¼ lin. longum, ¼ lin. latum, ovalc vel obovatum, lenticulare, lucidum, fuscum, basi styli decidua. In uno perigynio e specimine *Roylei*, n. 110, duo achenia normalia, stylo et stigmatibus 2 prædita, inveni.

The specimens of Dr. Hooker alone have occasionally the terminal spike *basi mascula*, the orifice of the perigynium more entire, and the bracts longer than in the specimens of other collections. They are not fully mature, and the scales, often *muticæ*, are of a very dark purple. I observe also, at the apex of some of the upper female spikes, either sterile or male florets.

The specimens of *Royle*, n. 145, on which Nees founded his *C. victorialis*, were all too young for any satisfactory character. He admits that the one he had “*floribus gaudet sine fructu*.” I have examined several specimens of them in my own and in the Herbarium of the Linnean Society, and in all I find 2 stigmata, and the characters of *C. notha*, as far as they can be ascertained from such imperfect data.

Nees thought that his *C. punctata* might prove to be a variety of *C. lenticularis*, Don (*C. phacota*, Spr.), and Drejer quotes it as a synonym under that species in his ‘*Symbolæ*;’ though, in referring to it in his subsequent observations, he had doubts on the subject, from the difference he observed in the form of the perigynium. He had no means of forming a satisfactory opinion. Both he and Nees omit to notice the muero on the scales. There can be no question of the evident and wide difference between the two species, apparent to any one by comparing t. 24 with Drejer’s figure of *C. phacota*, and t. 168. They do not belong to the same group, for while *C. phacota* is placed by Drejer in his *Arostachya*, *C. notha* belongs to his *Microrhynchæ*.

23. C. Jackiana (Boott); spicis 4–7 oblongis erctis pallide lutescentibus concoloribus, terminali mascula sessili, reliquis fœmineis, superioribus masculæ contiguis sessilibus, omnibus simplicibus, vel inferioribus remotis longe exserte pedunculatis compositis, infima longiori basi attenuato-laxiflora longe lateque bracteata; stigmatibus 3; perigyniis oblongo-ellipticis triquetris sensim acuminato-rostratis, ore membranaceo intcgro vel emarginato oblique secto demum bifido, glabris leviter æqualiterque crebre nervosis olivaceis superne vacuis, squama lanceolata acuta cuspidata æquilata pallida brevioribus longioribusque.—C. Jackiana, Boott, *Lin. Trans.* xx. 132. (TAB. XXV.)

HAB. In Java, *Horsfield*, et in regionibus temperatis mont. Khasiæ, alt. 6000 ped., *Hooker et Thomson*.

Culmus 1½–2-ped., acutangulus, lævis, debilis, basi foliatus; pars spicas gerens 3–7 etiam 14 poll. longa. *Folia* 2–4 lin. lata, culmo breviora, plana, mollia. *Bractæ* inferiores 3–4 lin. latae, vaginatæ, elongatæ: superiores evaginatæ, culmo longiores. *Pedunculus* infimus 2–7 poll. longus, lævis, vagina

infima 1–2 poll. longa. *Spica* mascula 7–12 lin. longa, 1 lin. lata. *Spicæ* fœmineæ superiorcs 6–11 lin. longæ, 2–3 lin. latae, infima interdum 2 poll. longa, 4–14 poll. remota, laxiflora: omnes simplices, vel binæ inferiores vel infima solum basi spiculis 1–2 paucifloris appressis sessilibus vel pedicellatis sæpe subremotis composita. *Squamæ* omnes conformes, pallidæ: fœmineæ inferiores perigynio longiores. *Perigynium* 3–3½ lin. longum, ¼ lin. latum *Achenium* 1 lin. longum, ¼ lin. latum, triquetro-obcordatum, abrupte basi styli æquali apiculatum, partem inferiorem perigynii implens.

In habit and appearance this species is like *C. pubescens*, Muhl. I see no difference between the specimens from Java and those from Khasia. The orifice of the perigynium is, I think, normally entire, obliquely cut, but from its membranous texture it is easily ruptured on the protrusion of the stigmata, and then appears more or less bifid.

24. C. maculata (Boott); spicis 4–5 cylindricis densifloris, terminali mascula ferruginea sessili sæpe abbreviata clavata obliqua, reliquis fœmineis interdum apice masculis vel sterilibus atro-purpureis stricte erectis, superioribus masculæ arcte contiguis subscsilibus, inferioribus remotis exserte pedunculatis longissime bracteatis; stigmatibus 3; perigyniis ovalibus vcl ellipticis sensim vel abrupte rostellatis rectis, ore emarginato, nervatis compresso-triquetris granulato-asperulis atro-purpureis sexfariis, squama ovata acuta vel mucronulata ferruginea medio viridi trinervi latioribus longioribusque.—C. maculata, Boott, *Lin. Trans.* xx. 128. (TAB. XXVI.)

HAB. In montibus subtropicis peninsulæ Indiæ orientalis: Nilghiri, *Wight*, et Ceyloniæ, *Walker*, *Gardner*, n. 944.

Culmus 1–1½-ped., gracilis, rigidus, lævis, triquier, sæpe (ut folia vaginæque præcipue) punctis ferrugineis (sub lente) maculatus; pars spicas gerens 3–5 poll. longa. *Folia* 1–4 lin. lata, culmo longiora, glauca, plana vel marginibus revolutis, rigida, granulata. *Bractæ* inferiores vaginatæ, culmum longe superantes: suprema sæpe spica sua brevior. *Vaginæ* 1–14 lin. longæ, intus membranaceæ, ferrugineaæ. *Pedunculus* infimus 10 lin. ad 2 poll. longus, granulato-asperulus. *Spica* mascula 4–14 lin. longa, 1 lin. lata, cylindrica vel clavata, sessilis, sæpe obliqua, spicâ fœmineâ supremâ brevior. *Spicæ* fœmineæ 6–22 lin. longæ, 1–2 lin. latae, rarius alternæ, sæpius superiorcs 2 vel 3 masculæ arcte contiguæ, scssiles vel breve inserte pedunculatae; infima vel binæ inferiores 1½–3 poll. remotæ, longe exserte pedunculatae. *Squamæ* conformes, ferrugineaæ, medio viridi trinervi: fœmineæ acutæ vel mucronulatae. *Perigynium* 1½–1¾ lin. longum, ¼–¾ lin. latum, nervis concoloribus vel pallidis, achenio latius, hinc marginibus compressis. *Achenium* ¼ lin. longum, ½ lin. latum, ovali-triquetrum, pallidum, basi styli æquali.

Habitus *C. granularis*, Muhl. Differt forma perigynii, spicis atro-purpuris, etc.

Since the publication of the paper in the Linnean Transactions, I have received specimens of this species from Dr. Wight, gathered on the Nilghiries. Whether it has occasionally only two stigmata I am doubtful. I find the achenium is always triquetrous.

25. C. Moorcroftii (Falconer); spicis 3–5 ovalibus oblongisve densifloris flavide purpureis demum plus minus decoloribus, terminali mascula scsili, reliquis fœminis vel apice masculis, omnibus vel superioribus masculæ arcte contiguis sessilibus bracteatis, infima nunc subremota pedicellata breve bractata, vcl rarius subradicali longe pedunculata composita; stigmatibus 3; perigyniis

ovalibus vel subglobosis ventricosis rostratis bifidis ener-
viis vel obscure nervatis membranaceis glabris superne
granulatis rarius ad margines hispidulis flavidis purpureo-
tinctis stipitatis, squama ovata vel lanceolata acuta mutica
vel cuspidata fusco-purpurea nervo pallido apice margini-
busque albo-hyalina brevioribus vel eam subæquantibus.
—C. Moorcroftii, Falconer, MSS.; Boott, Lin. Trans.
xx. 140. (TAB. XXVII.)

HAB. In Tibetia alpina tota, alt. 14–17,000 pcd., a
Balti, Falconer, etc., ad Sikkim, J. D. Hooker.

Dense cæspitosa. *Rhizoma* prælongum, repens. *Culmus*
9 poll. ad 2 ped. altus, gracilis, apice scabriuscus, basi folio-
sus, vaginisque rubro-purpureis demum marcidis tectus; pars
spicas gerens 15 lin. ad 2½ poll. longa, vel rarius 10 poll.
Folia 1½–2 lin. lata, culmo breviora vel subæquantia, rigida,
carinata, stricta, apice attenuata, glauca, demum flava, glaberrima
vel apice scabra. *Bractea* rarius spica sua longior, sub-
bulata. *Spica* maseula 6–10 lin. longa, 2 lin. lata, sessilis.
Spicæ foemineæ 6–12 lin. longæ, 2½–4 lin. latæ, omnes con-
gestæ, sessiles, vel infima brevi-pedunculata, 7–13 lin. remota;
rarius subradicalis, 15 lin. longa, basi ramulis subrotundis
sessilibus 2 vel 3 composita, pedunculo 5 poll. longo instructa.
Squamæ eonformes, ovatæ vel lanceolatae, fusco-purpuræ,
demum apice marginibusque late albo-hyalinæ, vel omnino
decoloræ: muticæ, nervo infra apicem evanescente, vel extra
producto. *Perigynium* plus minus stipitatum, 1½–2½ lin.
longum, ¾–1 lin. latum. *Achenium* 1½ lin. longum, ¾ lin.
latum, obovato-triquetrum, olivaceum, basi styli æquali ap-
iculatum.

Affinis *C. vernæ*, Schk., *C. conglobata*, Kit. Differt spicis
eongestis, sæpe apicem masculis, bractea abbreviata, perigyniis bi-
fidis, foliis glaucis.—An *C. sabulosa*, Turcz.?, Kunth Cyp. 432.

Falconer, in his letter to Professor Royle, says this *Carex* is the
“Tibet grass” of Moorcroft, called by the natives of Tibet “*Long-
ma*,” or as Lieut. Cunningham spells it “*Loong-mur*.” Moorcroft
in his Travels (vol. i. 293) says of it: “A very valuable herbage
occurs in the *Long-ma*, or Sand-grass of Ladak, which, growing on
loose sandy soil and forming an intricate network both on the
surface and beneath it, protects the slender covering of the
primitive substratum from being blown away by the strong winds
that sweep the valleys, and the whole country from being con-
verted into a succession of bare rocks and mounds of sand. The
Long-ma rarely reaches more than a height of ten or twelve inches,
and frequently not more than five or six, a considerable portion of
the blade being always buried in the sand. The length of the root
is much more considerable, and strikes so deep that it cannot be
extracted entire. At a depth of five feet it was found little di-
minished in circumference, throwing off numerous lateral fibres
through its whole course. The grass on the surface does not ex-
tend uniformly, but affects the form of patches, by which it more
effectively arrests the driving sand. Cattle will not eat it whilst
it is green, or while other pasture is procurable, but it is suffi-
ciently hardy to outlive other herbage, and in November, when
there is nothing else on the ground, it is eaten by horses and yaks.
It is then of a yellow tint, but when the leaves and crown are
eaten off, the brown stems are left almost level with the ground,
their interstices filled with sand, and the appearance of each patch
resembling that of an oakum door-mat. The plant emits a plea-
sant smell, and has a sweet and agreeable taste, but the leaf is stiff
and harsh with sharp edges. Although cattle do not fatten on it,
it is said to be very invigorating, and perhaps the extremely rich
quality of the milk of the yak in winter may be due to this grass.
The stories related by the carriers, of its effect in restoring vigour
to overworked horses, border on the marvellous. It furnishes
almost the whole of the winter food of the unstabaled brood mares
and colts of the Raja of Ladak, of the kiang or wild horse, of the
yak, and of all cattle which are left unhoused at that season.”

Very fine specimens of this species were brought by Dr. Thom-

son, one of the largest of which, with a compound radical spike, is
figured in Tab. XXVII. The nerves on the perigynium are repre-
sented too strongly. The orifice varies, being occasionally shortly
bifurcate with an obtuse sinus and sharp laciniæ, and the scales
are sometimes sharply cuspidate.

26. *C. leucantha* (Arnott); spica elongata demum pal-
lide straminea, e spiculis 6–7 androgynis apice masculis
ovatis densifloris subdecomposita, spiculis superioribus
simplicibus contiguis sessilibus, inferioribus distantibus
compositis ad apicem peduncularum insidentibus, pedun-
culis inserte vel exserte vaginatis longissime bracteatis;
stigmatibus 3; perigyniis ellipticis triquetris basi acutis
longiuscule rostratis, ore membranaceo bifido oblique
secto, crebre leviter nervosis pubescentibus stramineis,
squama ovato-lanceolata acuta hispido-cuspidata striato-
nervosa scabra pallida concolori æquata longioribus.—
C. leucantha, Arnott, MSS. in Herb.; Boott, Lin. Trans.
xx. 135. (TAB. XXVIII.)

HAB. In montibus peninsulæ Indiæ orientalis ad
Courtallum, Wight, et Ceyloniæ, Thwaites. Wallich ex
Herb. Heyne (sine loco natali).

Radix fibris lignosis validis, longis. *Culmus* 2–3-ped., gra-
cilis, rigidus, triquetus, scaber, basi foliatus, reliquiis foliorum
fibratis tectus; pars spicas gerens 6–20 poll. longa. *Folia*
1–2 lin. lata, culmo breviora vel longiora, rigida, carinata,
sæpc marginibus revolutis. *Bractæ* inferiores foliacæ, lon-
gissimæ, vaginatæ: infima sæpe culmo longior: supremæ sc-
tacæ, spicis suis sæpe breviores, evaginatæ. *Vagina* infima
6–14 lin. longa. *Pedunculi* inferiores paulo exserti, scabri.
Spiculæ 3–8 lin. longæ, 1½–3 lin. latæ: superiores simplices,
sessiles: reliquæ compositæ, plerumque 2 ad apicem pedun-
culi, altera subremota, omnes sessiles. Interdum spiculæ
omnes simplices: vel media solum composita: infima simplex,
basi attenuata. *Squamæ* eonformes, foemineæ longius cuspi-
datae. *Perigynium* 2½–3 lin. longum, ¾–1 lin. latum. *Ache-
nium* 1½ lin. longum, ¾ lin. latum, ellipticum, triquetrum,
fuscum, punctulatum, apiculatum, basi styli inerassata decidua.

27. *C. spicigera* (Nees); spica oblonga, e spicis parti-
alibus 10–12 pluribusve decomposita, superioribus sub-
rotundis sessilibus contiguis, inferioribus oblongis subre-
motis exserte pedunculatis magis compositis basi ramo-
sis, spiculis androgynis apice parce masculis parvis sub-
rotundis coarctatis bractcolatis, bracteis foliacæ culmo
multum longioribus; stigmatibus 3; perigyniis ovalibus
triquetris erostratis emarginatis scabris nervosis ciliatis
pallidis demum ferrugineis, squama ovata obtusa vel
acuta hispido-aristata ferruginea duplo longioribus.—*C.
spicigera*, Nees apud Wight, Contr. 121; Kunth, Cyp.
512. (TAB. XXIX.)

HAB. In Zeylania, Walker, Macrae! Wight, n. 1299!
Var. minor, Gardner, n. 949! Herb. Hooker.

Culmus 1–1½-ped., rigidus, gracilis, glaber, basi vaginis foli-
orum ferrugineis tectus, sursum foliis vaginantibus vestitus;
pars spicas gerens 4–5 pollices longa. *Folia* 1–2 lin. lata, culmo
multum longiora, rigida, carinata, marginibus revolutis, vagi-
nis longis ferrugineis. *Bractæ* foliacæ, culmo multum lon-
giiores: inferiores 1½ lin. latæ, vaginatæ. *Vagina* infima 8–12
lin. longa. *Pedunculi* 1–1½ poll. longi: infimus exsertus,
scabriuscus. *Spica* 5 poll. longa, 9 lin. lata. *Spicæ* parti-
ales inferiores 7–10 lin. longæ, 2½ lin. latæ, basi ramulo brevi
instructæ: infima exserte pedunculata. *Spiculæ* 2–3 lin. longæ,
1½–2 lin. latæ, apicem flosculis masculis 2–3 vix discernendis:

ad apicem culmi pedunculorumque arcte congestis, bracteolatis. *Squamæ* conformes. *Stigmata* brevia. *Perigynium* $1\frac{2}{5}$ — $1\frac{3}{5}$ lin. longum, $\frac{6}{5}$ lin. latum, pallide flavidum, demum fusco-ferrugineum. *Achenium* breve stipitatum, $\frac{8}{5}$ lin. longum, $\frac{4}{5}$ lin. latum, ovale, acute triquetrum, basi styli apiculatum, castaneum vel fuscum, angulis pallidioribus.

Var. *minor*; spica lineari, simpliciori; spicis partialibus minoribus, inferioribus spiculis 3—5 singulis paucifloris alternis, infima radicali, longe exserte pedunculata; perigyniis $1\frac{1}{2}$ lin. longis, utrinque acutis; achenio lineam longo, elliptico; antheris 2 flavis, apice purpureis; culmo pedunculisque setaceis.

28. *C. Wightiana* (Nees); spica elongata decomposita, e spicis partialibus 4—5 pallidis ambitu ovato vel oblongo pinnatim vel basi subduplicato pinnatim compositis, superioribus sessilibus contiguis, inferioribus longe exserte pedunculatis remotis longe bracteatis; spiculis oblongis erectis androgynis, apice saepe subdimidiatis masculis, basi flosculis foemineis 4—10 imbricatis quorum infimis saepe sterilibus; stigmatibus 3; perigyniis ellipticis triquetris rostratis, ore membranaceo bifido oblique secto, superne inter nervos rostroque scabris marginibus ciliatis rectis striato-nervosis imbricatis congestis pallide viridibus demum ferrugineo-flavidis, squama ovata acuta mucronata striato-nervosa pallida margine albida carina viridi scabra latioribus longioribusque.—*C. Wightiana*, Nees, *apud Wight, Contr.* 122; *Kunth, Cyp.* 512. (TAB. XXX.)

Var. spicis partialibus 8—9, inferioribus elongatis infima subradicali longe exserte pedunculatis longissime bracteatis, spiculis pluribus.

HAB. In peninsula Indiae orientalis, mont. Nilghiri, *Wight*, n. 1910, 1914, 1915, 1292, *Wallich, Cat.* n. 3400 c. Khasia, alt. 4000 ped., *Hooker et Thomson*, et in Himalaya orientali tropica ad Sikkim et Nipal, alt. 3—5000 ped., *J. D. Hooker*.

Culmus sub-2-ped., gracilis, rigidus, laevis, basi foliosus; pars spicas gerens pedalis. *Folia* 3—5 lin. lata, culmo longiora, plana, glaucescentia, scaberrima. *Bractæ* inferiores vaginatae, omnes nisi summa culmo longiores. *Spicæ* partiales superiores ovatae (1 poll. longæ), sessiles, contiguæ, pinnatae: inferiores ($2\frac{1}{2}$ poll. longæ) oblongæ, exserte pedunculatae, remotæ, basi subduplicato-pinnatae. *Spiculae* 4—9 lin. longæ, 2 lin. latae, basi, e squamis vacuis appressis, quasi pedicellatae, erectæ. *Rachis* glabra. *Squamæ* masculæ obtuse vel subacutæ, mucronulatae. *Perigynium* $1\frac{8}{5}$ —2 lin. longum, $\frac{6}{5}$ lin. latum. *Achenium* lineam longum, fere $\frac{6}{5}$ lin. latum, ellipticum, triquetrum, punctulatum, basi styli incrassata.

A *C. leucantha* differt inflorescentia magis composita; foliis latis, planis, glaucis; squamis foemineis ovatis, minus mucronatis; perigyniis brevioribus, glabrioribus.

The specimens n. 1296, Wight, both in my own Herbarium and in Herb. Arnott, are too young for a positive decision about them. From the greater number and length of the partial spikes upon them (the lower ones $3\frac{1}{2}$ —4 inches long), their insertion from the base of the culm upwards, the rather longer spiculae, with more numerous male flowers, and the longer muero to the lanceolate female scales, I have regarded it as a variety, though it may prove merely a more luxuriant state of the species. In Herb. Arnott it is named "*C. Indica, var.*, Nees." Nees quotes only "n. 1910, Wight," for his *C. Wightiana*; but I find in Herb. Arnott, and I have received also from Dr. Wight, specimens numbered 1914 and 1292, and from Dr. Wallie one (3400 c. *Herb. Wight*). Of these in Herb. Arnott, 1914 and 1292 are named "*C.*

Indica, Nees," and a specimen, n. 1915, in my own Herbarium (from Herb. Ward), and in Herb. Bentham, both equally from Dr. Wight, are named "*C. meiogyna*, Nees." I have no hesitation in referring all to *C. Wightiana*.

29. *C. hirtella* (Drejer); spicis 5 oblongis vel cylindraceis crectis, masculis 3 contiguis sessilibus pallidis, foemincis 2 purpureis, suprema sessili, infima subremota exserte pedunculata basi attenuata laxiflora, bracteis culmo brcvioribus; stigmatibus 3; perigyniis lanceolatis longe rostratis, ore hyalino obliquo acute bifido, plano-subtriquetris scabris marginibus c basi ciliato-serratis nervatis purpureis basi pallidis glabris, squama lanceolata acuta purpurea margine albo-hyalina longioribus.—*C. hirtella*, Drejer, *Symb.* 21. *C. tenuis*, Nees! *Wight, Contr.* 128. (TAB. XXXI.)

HAB. In Himalaya et Tibetia occidentali alpina, alt. 12—16,000 ped.: Kunawur, Royle, n. 120, 122! (ex parte), Jacquemont, n. 482! Kishtwar, Zanskar, Ladak, Thomson!

Cæspitosa. *Culmus* sesquipedalis, gracilis, obtusangulus, laevis, inter spicas scaber, nudus, basi foliosus vaginisque pallidis fibrillosis tectus; pars spicas gerens $4\frac{1}{2}$ poll. longa. *Folia* $\frac{1}{2}$ —1 lin. lata, culmum subæquantia, graminea, plana, carinata. *Vaginae* scabriusculæ. *Bractæ* vaginatae: infima vix culmum æquans. *Vaginae* 3—6 lin. longæ, scabriusculæ. *Pedunculus* infimus $1\frac{1}{2}$ poll. longus, laevis. *Spicæ* masculæ 3: suprema 6—10 lin. longa, $1\frac{1}{2}$ lin. lata: reliquæ arcte contiguæ, breviores. *Spicæ* foemineæ 6—12 lin. longæ, $1\frac{1}{2}$ —2 lin. latae, 2— $2\frac{1}{2}$ poll. remotæ: infima exserte pedunculata. *Squamæ* conformes, ovato-lanceolatae, acutæ, purpureæ, margine albo-hyalinæ: masculæ demum pallidæ. *Perigynium* $3\frac{3}{5}$ lin. longum, sublin. latum, antice nervis mediis magis prominentibus. *Achenium* $1\frac{8}{5}$ lin. longum, $\frac{7}{5}$ lin. latum, oblongo-ellipticum, stipitatum, apice piloso-seabridum, stylo basi dilatato piloso apiculatum.

Affinis *C. macrogynæ*, Turcz. Differt spicis masculis 3; perigyniis majoribus, longe rostratis, ore acute bifido; achenio apice piloso; culmo gracili; foliis augustioribus; squamis lanceolatis, acutis.

Drejer having seen only the specimens sent to Nees from Royle's collection, which were young, judged erroneously of the affinity of his *C. hirtella*, associating it with *C. glauca*. It evidently belongs to the *Ferrugineæ*. The right-hand specimen figured is from Royle, the other from Dr. Thomson. A perigynium and achenium of *C. macrogyna*, Turcz. (which at the time of the printing of the Plate I had named *C. obtusa*), are figured to contrast with those of *C. hirtella*.

30. *C. Horsfieldii* (Boott); spica longissima pallida concolori supradecomposita, e spicis partialibus 6—8 (ambitu oblongo-ovato) solitariis, inferioribus triplicato-racemosis remotis longe exserte pedunculatis stricte erectis longissime bracteatis, rachi superne scaberrima; spiculis androgynis apice masculis basi flosculis foemineis pluribus contiguis instructis squarrosis alternatim approximatis patentibus bracteolatis; stigmatibus 3; perigyniis ellipticis triquetris sensim rostratis, ore albo-membranaceo antice oblique secto integro vel cmarginato demum bifido, glabris, rostro apice ad margines parce denticulato, arcuatim recurvis crebre nervatis pallidis, squama cmarginata obtusa vel ovata acuta longe hispido-aristata albo-membranacea nervo viridi scabro longioribus.—*C. Horsfieldii*, Boott, *Lin. Trans.* xx. 131. (TAB. XXXII.)

HAB. In Java, Horsfield.

Culmus subbipedalis, validus, obtusangulus, laevis, basi fo-

liatus; pars spicas gerens 20 poll. longa. *Folia* 6–7 lin. lata, culmo florifero multum longiora, firma, glaucescentia. *Bractæ* inferiores 4 lin. latae, culmo longiores. *Vaginæ* inferiores 1–2 poll. longæ. *Pedunculi* inferiores 3–6 poll. longi, firmi, superne scabri: bini inferiores, versus apicem, auriculis 2 ferrugineis obtusis e basi spicæ pollicem remotis instructi. *Spicæ* partiales inferiores 2–3 poll. longæ, basi 1½ poll. latae, pallidæ, concordes, ramis oblique adscendentibus. *Spiculæ* 3–5 lin. longæ, 2–3 lin. latae, apice flosculis masculis paucioribus instructæ, bracteola setæformi basi dilatata suffultæ. *Squamæ* masculæ lanceolatae, acuminatae, acutæ vel mucronulatae: fœmineæ inferiores emarginatae, obtusæ, longius aristatae, superiores acutæ: omnes albo-membranaceæ. *Perigynium* (vix maturum) 2 lin. longum, ¼ lin. latum, pallide viride, ore albo-membranacco. *Achenium* 1 ⅔ lin. longum, ½ lin. latum, oblongo-triquetrum, basi productum, basi styli incrassata decidua.

Ad *C. cruciatam*, Nees, accedens, differt spicis partialibus solitariis, magis compositis; squamis fœmineis albidis, inferioribus emarginatis; perigyniis arcuatim recurvis; foliis rigidioribus, vaginis glabris; culmo pedunculisque validioribus.

I have not seen fully mature specimens of this species, in which probably there would be an elongation of the spiculæ, and a consequent looser arrangement of the perigynia. The presence of the obtuse ferruginous auriculae at some distance from the base of the lower spikes would seem to indicate the possibility of branches issuing from them, giving a greater composition to the spikes.

31. *C. Rafflesiana* (Boott); spica longissima (*tripedalis*) lœte ferruginea concolori supradecomposita, e spicis partialibus 8 (ambitu lanceolato), inferioribus clongatis tripli-cato-racemosis geminatis laxis remotis exerte pedunculatis longissime lateque bracteatis, inferne ramulis sub-elongatis alternatim subremotis pedicellatis erectis, superne pluribus brevibus ovatis alternis sessilibus compositis, spiculis numerosissimis parvis densifloris apice masculis; stigmatibus 3; perigyniis arcte congestis ovalibus triquetris rostratis, ore oblique scoto demum bifido, superne scabriusculis vel glabris, rostro excurvo, ad margines ciliato-serratis ferruginco-lineatis nervatis concoloribus, squama ovata acuta mucronata glabra lineolis ferrugineis notata longioribus. (TAB. XXXIII.)

Var. β ; spica fusco-ferruginea concolori, spicis partialibus inferne ramulis oblongis pedicellatis pluribus superne ovatis confluentibus, spiculis majoribus confertis, perigyniis ovali-lanceolatis longe rostratis rectis vel excursis scabrioribus lineolis ferrugineis undique notatis, squamis fœmineis dorso scabris, bracteis culmo brevioribus angustioribus.—*C. Rafflesiana*, Boott, *Lin. Trans.* xx. 132.

HAB. In Java, Horsfield.

Culmus validus, lœvis, apice scabriusculus; pars spicas gerens tripedalis. *Folia* desunt. *Bractea* infima 6 lin. lata: superiores angustæ, culmo longiores. *Spica* tripedalis, lœte ferruginea, concolor. *Spicæ* partiales inferiores geminatae, inæquales, 4–7 poll. longæ, subpollicem latae; inferne ramulis 1–1 ½ poll. longis, erectis, alternis; superne pluribus, sursum brevioribus, sessilibus, instructæ. *Spiculæ* parvæ, 2–3 lin. longæ, sub-2 lin. latae: superiores solitariæ, discretæ, approximatae. *Pedunculi* graciles, scabri: inferiores 3–4 poll. longi, inæquales, exserti. *Vaginæ* glabræ: infima 2 ½ poll. longa. *Rachis* scabra. *Squamæ* ovatae, acutæ, lineolis ferrugineis notatae: fœmineæ inferiores dorso scabriusculae, longius mucronatae: masculæ angustiores. *Perigynium* (vix maturum) 1 ⅓–1 ⅔ lin. longum, ¼ lin. latum, rostro ½ lin. longo, mar-

ginibus ciliato-scaberrimus, glabrum vel superne scabriusculum. *Achenium* ⅔ lin. longum, plus ⅓ lin. latum, oblongo-ovale, triquetrum, pallidum, basi styli subclavata, decidua.

Var. β . *Spiculæ* confluentes, flosculis masculis pluribus. *Squamæ* longiores, dorso scabré. *Perigynium* 1 ⅓–2 lin. longum, ⅓ lin. latum, rostro sœpe lineam longo, scaberimum. *Achenium* (maturum) fuscum, ⅔ lin. longum, ⅓ lin. latum, basi styli obliqua.

The aspect of the var. β , from its dull ferruginous colour, the larger confluent spiculæ, the more scabrous character of its scales and perigynium, with its long and often straight rostrum, and narrower bracts, contrasts with the form α . The elongated lanceolate outline of the partial spikes distinguishes this fine species from its allies on the continent of India.

32. *C. thrysiflora* (Boott); spica subelongata viridi ferruginea, e spicis partialibus 5–8 (ambitu ovato vel ovato-lanceolato) subduplicato-racemosis composita, superioribus agglomerato-ovatis confluentibus sessilibus, inferioribus sœpe geminatis laxioribus remotis oblongis erectis longe exserte pedunculatis, bracteis culmum subæquantibus; spiculis apice parce masculis densifloris erectis squarrosis; stigmatibus 3; perigyniis turgide ovalibus triquetris longe rostratis alte bifidis divergentibus glabris, rostro margine serrato, nervatis viridibus, squama ovato-lanceolata acuta sœpe subeniarginata hispido-aristata dorso scabra nervata ferruginea latoribus longioribusque. (TAB. XXXIV).

HAB. In peninsula Indiæ orientalis, ad Nilghiri mont., Wight.

Culmus subbipedalis, rigidus, triquierter, lœvis, superne strigoso-scaber, basi foliatus, sursum foliis vaginantibus munitus; pars spicas gerens 6–8 poll. longa. *Folia* 1–3 lin. lata, firma, culmum æquantia, olivaceo-viridia. *Bractæ* inferiores vaginatæ, foliaceæ: infima quandoque spica sua vix longior, vel clongata, culmum subæquans: supremæ scaccæ, breves. *Vagina* infima ½–2 poll. longa, apice scabra: superiores scaberrimæ. *Pedunculi* scabri: infimus 1–7 poll. longus, glabrior. *Rachis* strigoso-scabra. *Spicæ* partiales 1–1 ½ poll. longæ, 6–8 latae: superiores agglomerato-congestæ, sessiles: inferioræ remotæ, laxæ. *Spiculæ* 4–6 lin. longæ, 2–3 lin. latae, densifloræ, apice flosculis masculis 4–6 basi fœmineis pluribus undique imbricatis instructæ: omnes congestæ vel in spicis inferioribus discretæ, alternæ. *Squamæ* ferrugineæ, concolores: masculæ lanceolatae, angustiores, acuminatae, mucronatae, glabræ: fœmineæ inferiores magis scabré. *Perigynium* 2–2 ½ lin. longum, ⅔ lin. latum, divergens, viride, ferrugineo-tinctum. *Achenium* (cum stipite ⅔ lin. longo) 1 ⅔ lin. longum, ⅔ lin. latum, ovali-triquetrum, basi productum, fuscum, punctulatum, basi styli clavata abrupte apiculatum.

Affinis *C. raphidocarpæ*, Nees, quæ tamen foliis pilosis, rostro longiori graciliore, spicis magis compositis apertis gaudet.

Forsitan *C. Lindleyana*, Nees, forma; tamen ab ea e speciminiibus Wightianis! et Gardnrianis! differt spicis laxioribus, spiculis squarrosis, perigyniis divergentibus, flosculis masculis paucioribus, squamis fœmineisque scaberrimis.

The species of the Indian paniculate group of *Carex* will never be well understood until they are carefully studied by some patient observer in their native habitats. They seem to me to present in the herbarium the same difficulties that I found many years ago in the Asters of North America. It will be necessary to trace the modifications resulting from the young seedling plant and from older rooted ones, and from the immature to the fully mature state. The aspect of the spikes and spiculæ, the proportionate number of the male to the female florets, and the form and direction of the perigynium are materially affected by age, and by a more or less

luxuriant state of the plant. In the spiculae, by the gradual elongation of the rachis in maturity, the female florets become more and more lax, and the size and substance of the perigynium are often materially modified by the deposition of spongy matter between the coats. Peculiar localities also will undoubtedly explain many of the characters observable in the specimens upon which some of the species have been founded.

33. *C. nivalis* (Boott); spicis 4 vel 3–5 oblongis vel cylindricis basi attenuatis atro-purpureis concoloribus interdum albido-variegatis, superioribus, rarius omnibus, basi masculis contiguis sessilibus erectis, inferioribus exserte pedunculatis nutantibus, infima subremota rarius basi composita breve bracteata; stigmatibus 3; perigyniis ellipticis erostratis vel plus minus in rostellum abrupte desinensibus, ore subintegro vel emarginato demum albo-hyalino oblique fisso, atro-purpureis basi vel medio et basi albidis enerviis tenuissimis superne granulatis marginibusque plus minus serrato-dentatis, squama lanceolata acuta vel mucronata purpurea concolori vel nervo pallido longioribus latioribusque.—*C. nivalis*, *Boott, Lin. Trans. xx. 136. (TAB. XXXV.)*

Var. *cinnamomea*; spicis cinnamomeis concoloribus, *Royle, Herb.* “*C. cinnamomea*,” *Boott, l. c. 136.*

HAB. In Himalaya occidentali et Tibetia alpina, alt. 14–18,000 ped.: Kunawur, *Jacquemont*; Ladak et Nubra, *Thomson*; Gugi, *Strachey et Winterbottom*. “Supra Dhunrao, versus fauces montium Mana dictas, alt. 16,000 ped.” *Edgeworth*.

Stolonifera. *Culmus* 1–2-ped., acute triquetus, granulatus, erectus, saepe apice nutans, inferne foliatus; pars spicis gerens 2–10 poll. longa. *Folia* 2–4 lin. lata, culmo breviora, plana, apice attenuata, margine scabra, granulata. *Bracteæ* inferiores subfoliaceæ, spiculis suis breviores, vaginatae; superiores purpuræ, squamæformes. *Pedunculus* infimus 1–5 poll., granulatus. *Vagina* infima $\frac{1}{2}$ – $\frac{1}{2}$ poll. longa. *Spicæ* saepius 4, rarius 3–5, purpureæ vel albido-variegatae, 7 lin. ad $1\frac{1}{2}$ poll. longæ, 3– $3\frac{1}{2}$ lin. latæ: superiores saepius 3 (rarius 2–4 vel omnes) basi masculæ: inferiores basi attenuato-laxifloræ, nutantes. *Perigynium* $2\frac{2}{5}$ – $1\frac{6}{5}$ lin. longum, $\frac{8}{5}$ – $1\frac{2}{5}$ lin. latum. *Achenium* (cum stipite $\frac{4}{5}$ lin. longo) $1\frac{3}{5}$ lin. longum, $\frac{3}{5}$ lin. latum, inaequaliter trigonum, pallidum.

I described this species in 1846, in the twentieth volume of the Linnean Transactions, from a solitary specimen given to me by Mr. Edgeworth. I have since had the opportunity of examining those brought from India by the distinguished botanists quoted above. Its affinity is with *C. ustulata*, *C. coriophora*, *C. cinnamomea*, etc., from the last of which it is scarcely distinguishable except by its dark purple colour and larger perigynia. In the group to which they belong we have a similar contrast in colour in other species very closely allied, as in *C. ovata*, Rudge, compared with *C. atrata*, L., and in *C. coriophora*, Fischer, as compared with *C. ustulata*, *Wahl.*; and probably future observers, in seeing a larger suite of specimens from different localities, may combine these species now considered distinct. The contrast between the original specimens of *C. cinnamomea* and *C. nivalis* left no doubt on my mind, at the time, of their specific difference; but though I do not quote the one as a synonym of the other, I doubt much now.

The figure of the perigynium at *a* represents it as trigonous, which is not correct. Its texture is membranous, and in the dried state the form is compressed, taking in the middle anteriorly the impress of the small triquetrous achene. The only nerves are the two marginal ones, which, in the compressed state, appear at some distance from the apparent margin, and the style is visible through the transparent texture. The fig. *c* is more correct.

In Dr. Thomson's specimens the spikes have a remarkably va-

riegated white and purple colour, from the blanched spots at the upper sides of the perigynium, and the rostrum is generally more decided in form than is represented in the figure. Some of the leaves are faded and torn into blanched shreds. In twenty-three specimens I find—

3 spicis 3.	4 spicis 2 superioribus basi masculis.
15 spicis 4.	17 spicis 3 superioribus basi masculis.
5 spicis 5.	1 spicis 4 superioribus basi masculis.
—	1 spicis omnibus (3) basi masculis.
23	23

34. *C. Chinensis* (Retz); spicis 5–6 cylindricis crectis subapproximatis pallidis, terminali mascula pedunculata, reliquis foemineis laxifloris exserte pedunculatis, bracteis angustis inflate vaginatis, superioribus spicis suis brevioribus, infima culmo breviori; stigmatibus 3; perigyniis ellipticis acnte triquetris longiuscula rostratis basi attenuatis, ore bidentato membranaceo oblique secto, pubescentibus crebre æqualiter nervosis pallidis divergentibus, squama linearis-lanceolata acuta vel saepe emarginata obtusa longe hispido-cuspidata pallida medio viridi trinervi latioribus brevioribusque.—*C. Chinensis*, *Retz, Obs.; Wahl. Act. Holm.* iii. 155; *Willd. iv. 283; Schk. 70; Kunth, 517; Spr. Syst.* iii. 825. *C. Retzii*, *Nees, l. c. 128. (TAB. XXXVI.)*

HAB. In China: Canton, *Bladh, apud Wahlenberg*; Macao, *Gaudichaud, Herb. Mus. Paris.*

Culmus subpedalis, triquierter, scaber, basi foliosus; pars spicas gerens 6–7 poll. longa. *Folia* 1–2 lin. lata, culmo longiora. *Bracteæ* vaginantes: infima $\frac{1}{2}$ –1 lin. lata. *Vaginæ* subinflatæ: infima 6–8 lin. longa. *Pedunculus* infimus $1\frac{1}{2}$ poll. longus. *Spica mascula* 14–18 lin. longa, $1\frac{1}{4}$ lin. lata. *Spicæ fœminæ* 1– $1\frac{1}{2}$ poll. longæ, 2–3 lin. latæ, a se 1– $1\frac{1}{2}$ poll. remotæ. *Squamæ* conformes. *Perigynium* $1\frac{1}{2}$ –2 lin. longum, vix $\frac{1}{2}$ lin. latum. *Achenium* $\frac{7}{6}$ lin. longum, $\frac{4}{5}$ lin. latum, ovale, utrinque acutum, perigynio arcte tectum, atro-purpureum; basi styli incrassata, triquetra, decidua.

I am indebted to M. Spach for the knowledge of this species, and for the figure taken from Gaudichaud's specimen in the herbarium at the Garden of Plants at Paris. I had previously seen it in the herbarium of Sir W. J. Hooker; but the expression of Wahlenberg, “capsulis ovali-ventricosis,” had made me doubt about its being Retz's plant. As the achene ripens, and the rostrum and attenuated base of the perigynium proportionally shrink, the epithet ventricose is to a degree applicable, though the achene is closely invested by the perigynium. It is remarkable that Wahlenberg alone alludes to the pubescence of the perigynium. Retz remarks the resemblance of the spikes to those of *C. Pseudocyperus*, probably from the form of the scales; for the two species are not otherwise allied. He says, “*Spicæ fœminæ omnino Pseudocyperi*, sed erectæ, remotæ, solitariæ, tenuiores.”

35. *C. filifolia* (Nuttall); spica simplici androgyna apice mascula oblongo-cylindrica nuda ferruginea-demum castaneo-albida; stigmatibus 3; perigyniis triquetro-ovalibus rostellatis, ore integro albo-hyalino, pallidis apice ferrugineo tintis scabris enerviis laxiusculis squamam latiorcm obtusissimam medio ferrugineam demum castaneam marginibus latissime albo-hyalinis amplectentem subæquantibus.—*C. filifolia*, *Nutt. Gen. ii. 204 (1818); Brown in Franklin Nar. App. 763; Schw. et Tor. 298; Dewey, Sill. xi. 150 et xii. 296. Uncinia breviseta, Tor. Mon. 428. Kobresia globularis, Dewey, l. c. xxix. 253. (TAB. XXXVII.)*

HAB. In America Boreali. Dry plains and gravelly

hills of the Missouri, Nuttall. Carlton House, Sir John Richardson. Rocky Mountains, Drummond.

Cæspitosa. *Culmus* 6–10-pollicaris, filiformis, lævis, basi foliatus, vaginisque elongatis ferrugineis tectus. *Folia* involuta, filiformia, rigida, culmo breviora vel æquantia. *Spica* 6–10 lin. longa, apice (plus minus mascula) lineam, basi 3 lin. lata. *Squamæ* ferrugineæ, demum castaneæ, ncrvo infra apicem evanescere: masculæ angustiores, obtusæ: fœmineæ nisi infima obtusissimæ, plus latæ quam longæ, omnes marginibus late albo-hyalinæ. *Perigynium* 1 $\frac{6}{10}$ lin. longum, $\frac{8}{10}$ – $\frac{9}{10}$ lin. latum, achenium laxe vestitus, encrve vel basi obscure nervatum. *Achenium* 1 $\frac{2}{10}$ lin. longum, $\frac{8}{10}$ lin. latum, triquetro-ovatum, olivaceum, punctulatum, basi styli crassiori apiculatum; rachcolâ ligulatâ serratâ, apice albo-ferruginea, membranacea, subequilongâ præditum.

I have the authority of Mr. Nuttall as to the identity of the Carlton House and Rocky Mountains specimens with his own. I quote the *Kobresia* of Dewey—the description of which I have not seen—on the authority of Dr. Torrey, though in the last notice of the species Dewey makes no reference to that plant, nor to his previous mistake in considering Richardson's plant to be *C. ursina*. The larger specimen figured is from Carlton House, the smaller one from the Rocky Mountains.

36. *C. comosa* (Boott); spicis 4–6 cylindricis densifloris pedunculatis, terminali mascula elongata bracteata ferruginea, reliquis fœmineis crassis olivaccis squarrosis demum nutantibus vel pendulis, superioribus vel omnibus evaginatis approximatis vel infima remota interdum longe pedunculata plus minus vaginata; bracteis inferioribus culmo multum longioribus; stigmatibus 3; perigyniis ovatis vel ovalibus triquetris subturgidis stipitatis longe rostratis alte bicuspidatis (laciis subulatis lævibus patentissimis recurvatis) glaberrimis nervosis demum divergentibus retroflexisque, squama lanceolata vel oblonga serrata pallida longe hispido-aristata latioribus longioribusque vel infimis (aristâ) brevioribus.—*C. comosa*, Boott, Lin. Trs. xx. 117! Carey, l. c. 530; Sartwell, Exs. n. 134! *C. furcata*, Elliott, ii. 552 (non Lapeyr.). *C. Pseudocyperus*, Tor. ! Dewey ! (ex parte). (TAB. XXXVIII.)

HAB. In America septentrionali. New England to Georgia.

Culmus 2 $\frac{1}{2}$ -pedalis, acute triquetter, validus, scaber; pars spicas grecens 3–6, etiam 10 poll. longa. *Folia* 3–5 lin. lata, culmo longiora, nodosa. *Bractea* infima latior, longissima, interdum vaginata: aliae sursum decrescentes, evaginatae: summa sæpe setacea. *Vagina* 1–16 lin. longa. *Pedunculi* 2 lin. ad 1 $\frac{1}{2}$ poll. longi, vel inferiores rarius 4–10 poll. *Spica mascula* 1–3 poll. longa, 3 lin. lata, ferruginea, pedunculata: squamæ linear-lanceolatae, hispido-aristatae, scabriusculæ, laxe imbricatae. *Spicæ fœmineæ* 1 $\frac{3}{4}$ –2 $\frac{3}{4}$ poll. longæ, 6–7 lin. latæ, e rostro laciis que elongatis divaricatis quasi comosæ. *Squamæ* lanceolatae vel oblongæ, medio pallide virides, lateribus ferrugineis, ciliato-serratae, longe hispido-aristatae. *Perigynium* 3–3 $\frac{1}{2}$ lin. longum, $\frac{7}{10}$ lin. latum, alte bicuspidatum, laciis fere lineam longis, divaricatis, sæpe recurvatis: glaberrimum, nervosum, demum retroflexum. *Achenium* $\frac{8}{10}$ lin. longum, $\frac{4}{10}$ lin. latum, oval, triquetrum, castaneum, basi styli conica apiculatum.

Habitus *C. Pseudocyperi*, L. Differt spicis fœminis crassioribus, comosis; perigyniis altius bicuspidatis, laciis patentissimis, lævibus, recurvatis.

Mr. Elliott first distinguished this fine species, but gave it a name that had been adopted by Lapeyrouse. It was subsequently confounded with *C. Pseudocyperus*, with which it seems to be com-

mon in the States, as far north as New England. I have never seen any specimens from the British Provinces.

37. *C. utriculata* (Boott); spicis 6–7 rarius 5–8 cylindricis elongatis, masculis 3–4 gracilibus, inferioribus sæpe bracteatis, fœmineis 3–4 crassis remotis sessilibus vel infima basi attenuato-laxiflora pedunculata rarius vaginata, superioribus interdum apice masculis; bracteis culmo multum longioribus; stigmatibus 3; perigyniis oblongo-ellipticis sensim in rostrum cylindricum acuminatis bifurcatis glabris inflatis nervatis stramineis, squama lanceolata acuminata hispido-cuspidata purpurea medio pallida latioribus longioribusque.—*C. utriculata*, Boott, Hook. Fl. Bor. Am. ii. 221; Journ. Bot. l. c. (excl. *C. bullata*? β , Fries). *C. ampullacea* β , Carey, l. c. 534. (TAB. XXXIX.)

Var. β , minor, Sartwell, Exs. n. 153.

HAB. In America septentrionali. Cumberland House, etc., Richardson. New England to Ohio.

Culmus 2–3-pedalis, triquetter, validus, glaber, inter spicas scaber, basi spongiosus, crassus; pars spicas grecens 9–12 poll. longa. *Folia* 4 $\frac{1}{2}$ lin. lata, culmo longiora, rigida, nodosa, glauca, basi culmum amplectentia. *Bractæ* latæ, culmum longe superantes: infima interdum vaginata; auricula obtusa, purpurea, amplectens. *Vagina* 2–12 lin. longa. *Pedunculus* 8–12 lin. longus, glaber. *Spicæ masculæ* sæpius 3–4, rarius 2–5, graciles, 1–4 $\frac{1}{2}$ poll. longæ, lineam latæ vel sæpe angustioræ, omnes vel mediae sessiles, inferiores sæpe bracteatae, interdum apice fœmineæ: squamæ lanceolatae, acutæ, purpuræ, medio pallidæ, marginæ albo-hyalinæ: demum omnino decolores. *Spicæ fœmineæ* sæpius 3 vel 2, rarius 4–5, a sc 1 $\frac{1}{2}$ –3 $\frac{1}{2}$ poll. remotæ, 2 $\frac{1}{2}$ –4 poll. longæ, 7–8 lin. latæ: superiores sessiles, densifloræ: infima basi attenuato-laxiflora, plus minus longe pedunculata; in uno specimine spiculâ semipollucari remota, basi composita. *Squamæ* lanceolatae, acutissimæ, hispido-cuspidatae, purpureæ, medio pallidæ. *Perigynium* 4 $\frac{1}{2}$ lin. longum, 1 $\frac{1}{2}$ lin. latum. *Achenium* lineam longum, triquetro-ovatum, basi styli æquali apiculatum, punctulatum.

Var. β ; omnibus partibus minoribus.

In speciminibus bene expositis satis a *C. vesicaria* et *C. ampullacea* distinguenda. Inter eas intermedia. In majoribus propriis ad *C. vesicariam*, in minoribus ad *C. ampullaceam* accedens. Ab utrinque squamis fœmineis hispido-cuspidatis recedit. A *C. vesicaria*, cui forma fructus accedit, differt omnibus partibus majoribus; foliis latioribus, glaucis, insigne ter venoso-reticulatis, bracteis multum longioribus; spicis pluribus, fœmineis rarius 2, sæpius 3, inferioribus basi magis attenuato-laxifloris; perigyniis rostro cylindrico longiori. A *C. ampullacea* pluribus characteribus supra notatis absimilis præcipue perigyniis oblongo-ellipticis.

In the 'English Flora,' Sir James Smith remarks that "the fruit of *C. ampullacea* resembles a bottle or flask, *ampulla*; that of *C. vesicaria* a bladder, *vesica*; so that they ought never to have been confounded in character or name, to say nothing of the totally different shapes of their spikes when ripe." Among European botanists there is no difference of opinion on the subject of these two species. Future observation must determine in America the value to be affixed to the species of this group.

In 50 specimens of *C. utriculata*, I find—

5	with 5 spikes.	1	with 2 male.	11	with 2 female.
24	" 6	27	" 3	33	" 3
18	" 7	20	" 4	5	" 4
3	" 8	2	" 5	1	" 5

In 135 specimens of *C. vesicaria*, I find—

6	with 3 spikes.	6	with 1 male.	9	with 1 female.
56	" 4	57	" 2	110	" 2

58 with 5 spikes.	65 with 3 male.	14 with 3 female.
12 „ 6	5 „ 4	2 „ 4
2 „ 7	1 „ 5	
1 „ 8	1 „ 6	
In 110 specimens of <i>C. ampullacea</i> , I find—		
1 with 2 spikes.	2 with 1 male.	10 with 1 female.
3 „ 3	60 „ 2	62 „ 2
44 „ 4	35 „ 3	32 „ 3
38 „ 5	9 „ 4	5 „ 4
15 „ 6	2 „ 5	1 „ 5
5 „ 7	1 „ 7	
2 „ 9	1 „ 11	
1 „ 11		
1 „ 15		

38. *C. Tuckermani* (Boott); spicis 5 rarius 4–6, masculis 2 rarius 3 gracilibus approximatis cylindricis, infima saepe ebracteata, foemineis 3 rarius 2 oblongis cylindricisque subapproximatis crassis pallide viridibus demum stramineis pedunculatis vel supra sessili infima nutanti saepe vaginata; bracteis culmo subinde multum longioribus; stigmatibus 3; perigyniis tenuissimis pellucidis turgide ovalibus inflatis longe cylindrico-rostratis, rostro tenui, bifurcatis glabris oblique adscendentibus nervatis nitidis, squama ovata vel lanceolata acuta saepe cuspidata ferruginea medio viridi margine albo-hyalina multum latioribus longioribusque.—*C. Tuckermani*, Boott, Hook. Journ. Bot. v. 73 (1846); Lin. Trans. xx. 115; Dewey, Sill. xlix. 48, et iv. (2 ser.) 348; Sartwell, Exs. n. 155. *C. bullata*, Dewey, Sill. ix. 71; Kunth, 496 (ex parte); Schw. et Tor. 367; Tuck. En. Méth. p. 20. *C. cylindrica*, Carey, 534 (non Schw.). (TAB. XL.)

HAB. In America septentrionali, in paludosis. New York to Ohio and Wisconsin.

Culmus 2–2½-pedalis, firmus, scaber, basi vaginis atro-purpureis reticulato-fissis tectus, sursum foliis vaginantibus vestitus; pars spicas gerens 6–10 poll. longa. *Folia* 1–2½ lin. lata, culmo longiora, scabra. *Bractae* culmo multum longiores: infima saepe subsesquipedalis, vaginata. *Vagina* 2–10 lin. longa. *Pedunculi* 2–12 lin. longi, scabri. *Spicæ masculæ* saepius 2 vel 3, rarissime 1–4, alternæ: terminalis cylindrica, 1–1½ poll. longa: inferiores saepe abbreviatæ, una vel altera nunc ex perigynio egrediente: infima saepe ebracteata: omnes castaneæ. *Spicæ foemineæ* 8 lin. ad. 2 poll. longæ, 8 lin. latæ, saepius 3 vel 2, rarissime 1, a se 1–2 poll. remotæ. *Squamæ* conformes: masculæ lanceolatæ, obtusæ vel acutæ, rarius mucronatæ: foemineæ ovatae vel lanceolatae, saepe hispido-cuspidatae. *Perigynium* 5 lin. longum, 2 lin. latum. *Achenium* elliptico-triquetrum, pallidum, basi styli crassiori apiculatum, plerumque abnormale, uno angulo incisum, vel transversim excavatum, curvatum.

A *C. bullata*, Schk., differt, perigyniis membranaceo-tenuissimis, glabris, majoribus, oblique adscendentibus; spicis foemineis pluribus, longioribus, longius pedunculatis, minus densis; squamis saepe cuspidatis; pedunculis scabris, culmo scabriori; bracteis longioribus.

This very distinct species has until lately been referred to the *C. bullata*, Schk., and Kunth has described a specimen from Jacquemont under *C. bullata*, remarking that it differed from Schkuhr's figure in having a smooth rostrum. Tuckerman says that it has not been found in New England; my specimens are generally from the western parts of the state of New York. Sullivan has found it in Ohio, and Lapham in Wisconsin. I have three authentic specimens, from different sources, of the *C. cylindrica* of Schweinitz, all referable to *C. bullata* of Schkuhr.

39. *C. bullata* (Schkuhr); spicis 4–3 rarissime 5, mas-

culis 2–3 cylindricis gracilibus contiguis ferrugineis, infima bracteata, foemineis 1 rarius 2 subrotundis vel oblongo-cylindraceis crassis squarrosis densifloris remotis flavidis sessilibus vel pedunculatis, infima subinde nutanti breve vaginata, bractea culmum subæquante vel infima eo longiori; stigmatibus 3; perigyniis turgide ovatis longe cylindrico-rostratis, rostro scabro, bifurcatis inflatis nervatis nitidis densis demum divaricatis, squama lanceolata acuta pallide ferruginea medio viridi margine albo-hyalina latioribus longioribusque.—*C. bullata*, Schk. f. 166, u. u. u.; Boott, Journ. Bot. v. 74; Carey, 534; Sartwell, Exs. n. 154. *C. cylindrica*, Schw. (fide spec. 3, authent.) ; Tuck. En. Méthod. p. 20. (TAB. XLI.)

HAB. In America septentrionali, in pratis humidis. New England to Pennsylvania.

Culmus 1½–2-pedalis, gracilis, firmus, triquierter, glaber vel scabriusculus, inter spicas scaber, basi vaginis purpureis vel fuscis tectus; pars spicas gerens 4–8 poll. longa. *Folia* 1–1½ lin. lata, culmo longiora, nodosa, firma, plana. *Bractea* culmum subæquans: infima eo longior, rarius vaginata. *Vagina* 2–4 lin. longa. *Pedunculi* 4 rarius 12 lin. longi, glabri. *Spicæ masculæ* ½–2 poll. longæ, 1–1½ lin. latæ: infima tantum bracteata. *Spicæ foemineæ* saepius 1, rarius 2, a se 2–4 poll. remotæ, 10–16 lin. longæ, 7–8 lin. latæ, sessiles vel pedunculatae: suprema interdum apice mascula. *Squamæ* conformes; masculæ arcte imbricatae. *Perigynium* 3–4½ lin. longum, 1–1½ lin. latum, rostro sebro margine serrato rarius glabro, nervis 10–14. *Achenium* 1–2 lin. longum, 1–1½ lin. latum, elliptico-triquetrum, fuscum, papillosum, basi styli crassiori apiculatum; stylo contorto.

This species has been confounded with *C. Tuckermani*, and I cannot quote with any confidence any other authorities than those I have mentioned above. I have three authentic specimens of it from Herb. Schweinitz, under the name of *C. cylindrica*: one sent to me by Kunze, received from Schweinitz, another from the same source from Herb. Hooker, and one from Herb. Tuckerman, sent to him by Dewey, and received from Schweinitz under the name of *C. cylindrica*.

40. *C. Olneyi* (Boott); spicis 5 rarius 4–6, masculis 3 rarius 2–4 cylindricis gracilibus contiguis castaneis binis inferioribus saepe bracteatis, foemineis 2 rarissime 1–3 cylindricis crassis densifloris subapproximatis flavidis sessilibus vel pedunculatis subnutantibus, infima nunc basi attenuata vaginata; bractea infima culmo longiori; stigmatibus 3; perigyniis turgide ovatis breve cylindrico-rostratis, rostro apice laciniisque serratis bifurcatis inflatis nervatis nitidis divergentibus, squama lanceolata acuta interdum cuspidata pallide ferruginea margine albo-hyalina apice saepe ciliata latioribus longioribusque. (TAB. XLII.)

HAB. In America septentrionali. Rhode Island, Olney, in limosis.

Culmus subsesquipedalis, subvalidus, firmus, saepe obtusangulus, glaber, vel acutangulus, superne scaber, basi vaginis (limo pollutis) tectus; pars spicas gerens 6–8 poll. longa. *Folia* 1–2 lin. lata, culmo longiora, rigida, carinata. *Bractea* infima culmo longior, rarius vaginata. *Vagina* 1–3 lin. longa. *Pedunculus* infimus 2–6, rarius 15 lin. longus. *Spicæ masculæ* saepius 3, 10–20 lin. longæ, lineam latæ, binæ inferiores saepe bracteatae. *Spicæ foemineæ* saepius 2, rarissime 1, vel 3, a se 1–2 poll. remotæ, 15–23 lin. longæ, 5–6 lin. latæ: suprema sessilis: infima pedunculata, saepe nutans. *Squamæ* conformes, masculæ arcte imbricatae: inferiores nervo infra

apicem evanescere : superiores nervo ad apicem vel extra producto : foemineae acutae, subinde cuspidatae vel apice ciliolatae. *Perigynium* $2\frac{1}{2}$ -3 lin. longum, $1\frac{4}{5}$ lin. latum : rostro glabro, apice ad margines laciniasque tantum serrato : nervis sub-12, quorum 7 magis prominentibus aliis tenuioribus superne evanescit. *Achenium* $1\frac{3}{5}$ lin. longum, $\frac{7}{10}$ lin. latum, triquetro-obovatum ; stylo contorto.

Aspectus potius *C. vesicariae* quam *C. bullatae* ; erescit in limosis, nec in pratis. A *C. bullata* differt culmo validiori ; foliis latioribus ; spicis pluribus, masculis saepius 3, binis inferioribus bracteatis, foemineis plerumque 2 rarissime 1, cylindricis, angustioribus, magis approximatis ; perigyniis minoribus, rostro breviori ; squamis interdum cuspidatis.

In twenty-four specimens I find—

9 with 4 spikes.	6 with 2 male.	5 with 1 female.
12 „ 5	16 „ 3	16 „ 2
3 „ 6	2 „ 4	3 „ 3

In thirty-five specimens of *C. bullata* I find—

12 with 3 spikes.	22 with 2 male.	23 with 1 female.
21 „ 4	13 „ 3	12 „ 2
2 „ 5		

I have named this species after its discoverer, Mr. Olney, to whom I am exclusively indebted for it. I have not seen it in any other collection.

41. *C. Baltzellii* (Chapman); spicis 4-5 purpureis cylindricis erectis, terminali mascula pedunculata, reliquis foemineis vel apice extremo masculis, suprema vel binis superioribus subremotis inserte vel omnibus radicalibus longe exserte inaequaliter pedunculatis sublaxifloris basi attenuatis, vaginis superioribus subaphyllis ; stigmatibus 3 ; perigyniis ellipticis plano-triquetris stipitatis basi attenuatis rostellatis, ore integro antice oblique secto, apice subexcurvis pubescentibus crebre nervosis viridibus superne purpureo tinctis, squama oblongo-obovata truncata obtusissima saepc emarginata vel abrupte acutata brcve cuspidata apice ciliolata purpurea medio late pallida angustioribus longioribus vel subaequantibus.—*C. Baltzellii*, Chapman, MSS.; Dewey, Sill. iii. (2 ser.) 355, 1847; Sartwell, Eas. n. 103 ! C. Chapmani, Torrey, MSS.! (TAB. XLIII.)

HAB. In America septentrionali. Florida, Chapman. In sandy ravines.

Culmus gracillimus, debilis, 9-12-pollicaris, scaber. *Folia* radicalia 2-3 lin. lata, culmo longiora, plana, glaucescentia, supra vesiculose-scabrata. *Vaginae* superiorcs 4-8 lin. longae, cuspidatae : inferiores breve foliaceae. *Pedunculi* inferiorcs inaequales, $2\frac{1}{2}$ -4 poll. longi. *Spica mascula* 12-16 lin. longa, $1\frac{1}{2}$ lin. lata, cylindrica, purpurea, plus minus longe pedunculata, in uno specimine basi flosculis foemineis 2 instructa. *Spiculae* foemineae 8-18 lin. longae, $2-2\frac{1}{2}$ lin. latae : suprema c mascula 2 poll. remota, altera interdum subapproximata : vel omnes radicales : saepc apice extremo masculae. *Squamæ* purpureæ, apice ciliolatae : masculæ imbricatae, apice rotundato-obtusæ, nervo extra apicem producto, inferiores latiores, emarginatae : foemineæ medio late pallidæ, laxiores. *Perigynium* $2\frac{1}{2}$ lin. longum, $\frac{7}{10}-\frac{8}{10}$ lin. latum, sub lente tenuissime granulatum. *Achenium* $1\frac{3}{5}$ lin. longum, $\frac{8}{10}$ lin. latum, acute plano-triquetrum, ellipticum, basi styli apiculatum, stipitatum, fuscum ; stipite pallido.

We are exclusively indebted to Dr. Chapman for this addition to the *Digitatæ* of Fries. Dewey describes the leaves as slightly pubescent. I observe nothing but copious little white vesicles, often ruptured at top, on the upper surface of them.

42. *C. Boottiana* (Bentham) ; dioica!, spicis 1-2 pur-

pureis cylindricis erectis pedunculatis, mascula 1 basi attenuata, foeminea 1 densiflora vel rarius 2, infima breviori contigua vaginata, vagina subaphylla ; stigmatibus 3 longis capillaceis ; perigyniis triquetro-ovatis eros-tratis obtusis vel abrupte rostellatis rectis, orci bidentato ciliato, stipitatis nervatis pubescentibus pallidis superne purpureo tinctis marginibusque ciliato-dentatis, squama oblonga obtusa breve abrupte apiculata vel lanceolata acuminata acuta cuspidata ciliolata purpurea medio pallida apice albo-hyalina angustioribus brevioribusque.—*C. Boottiana*, Benth., Boston Journ. Nat. Hist. v. (1845). (TAB. XLIV.)

HAB. In America scptentrionali. Louisiana, Drummond, n. 560 (Herb. Bentham) ; Alabama, Mr. Peters.

Culmus 6-8-poll., gracilis, triquierter, scaber, superne nudus, basi foliis angustis brevibus vaginantibus tectus. *Folia* sterilia 1-2 lin. lata, firma, culmo multum longiora, late viridia, basi purpurea ; quedam angusta fere setacea. *Bractea* lanceolata, cuspidata, fissa, basi amplectens : inferior quandoque sterilis, 2 poll. remota. *Vagina* 3-12 lin. longa. *Spica* mascula 12-14 lin. longa, 2 lin. lata : foeminea $1\frac{1}{2}$ -2 poll. longa, 3 lin. lata, rarius altera ad basin superioris sita, 6-8 lin. longa. *Squamæ* coniformes, abrupte vel sensim acuminatae, acutæ : vel foemineæ inferiores latiores, oblongæ, obtusæ, abrupte apiculatae, muticæ : superiores lanceolatae, acuminatae, acutæ, cuspidatae, nervo angusto pallido. *Perigynium* $2-2\frac{1}{2}$ lin. longum, $\frac{7}{10}-\frac{8}{10}$ lin. latum. *Achenium* (cum stipite $\frac{3}{10}$ lin. longo) $1\frac{1}{2}$ lin. longum, $\frac{7}{10}$ lin. latum, oblongo-triquetrum, ferrugineum, basi styli incrassata.

A *C. Baltzellii* differt inflorescentia dioica ! ; spica foemina erassiori, densiflora ; squamis foemineis nusquam emarginatis ; superioribus acuminatis, acutis, nervo centrali augusto ; perigyniis rectis, saepc crostratis, obtusis, vel rostellatis, ore bidentato ; foliis radicalibus late viridibus, angustioribus.

C. Baltzellii was not published by Dewey before 1847, and when I saw it, I thought for some time that the immature specimens from New Orleans, from which *C. Boottiana* was described in 1845, might prove to be a depauperate form of the Florida plant, discovered by Chapman ; but having been favoured lately, through the kindness of Dr. Gray, with mature specimens of *C. Boottiana*, from Alabama, sent by Mr. Peters, I find the dioecious inflorescence to be constant, and that the scale and perigynium afford distinctive characters. Still, from the occasional presence of a subremote vaginal bract, it may be found hereafter that the inflorescence approaches more nearly that of *C. Baltzellii*, and that even radical spikes may appear, as in that species.

The specimens figured are the original ones from Drummond in a young state. The mature perigynia are from Mr. Peters's specimens, sent to me in a letter by Dr. Gray.

43. *C. marcida* (Boott) ; spica oblonga pallida, e spiculis androgynis apice masculis parvis ovatis congestis composita, inferioribus compositis, omnibus sessilibus coarctato-imbricatis nudis ; stigmatibus 2 ; perigyniis suborbiculatis vel ovatis plus minus longe rostratis bifidis plano-convexis nervatis fuscis superne marginis alatis serratis, squamam ovatam acutam pallide stramineam margine albo-hyalinam subaequantibus.—*C. marcida*, Boott, Hook. Fl. Bor. Am. ii. 212. t. 213. (TAB. XLV.)

HAB. In America septentrionali, ad ripas fl. Columbiæ, Scouler.

Culmus $1\frac{1}{2}$ - $2\frac{1}{2}$ -ped., gracilis, firmus, triquierter, superne nudus, scaber, basi foliatus. *Folia* lineam lata, culmo breviora. *Spica* 8-15 lin. longa, 4-5 lin. lata. *Spiculae* 2-3 lin. longae, lineam latæ, numerosæ : superiores simplices : inferiores e spiculis

10–12 compositæ: omnes sessiles, congestæ, imbricatae, quasi florentes, tamen perigynia matura seclusa ferentes. *Squamæ* conformes, acutæ: infima mucronato-setacea. *Perigynium* breve stipitatum, suborbiculatum, $1\frac{4}{10}$ lin. longum, vel ovatum, longius rostratum, $1\frac{6}{10}$ lin. longum, $\frac{7}{10} - \frac{8}{10}$ lin. latum, superne ad margines alatum, serratum. *Achenium* $\frac{7}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, lenticulare, basi productum, fuscum, basi styli æquali decidua.

This species was founded on a few specimens, brought from the Columbia River by Mr. Scouler many years ago, and was described and figured in the 'Flora Boreali-Americanæ' of Sir W. J. Hooker. I have not since seen any other specimens. The difference in the form of the perigynium may be seen by a reference to the two figures, though the winged margin, which varies in width, is not expressed in the original figure in the Fl. Bor. Am. The only species allied to it, that I know of, is the *C. Sartwellii*, of Dewey, but that, perhaps inseparable from the *C. disticha* of Hudson, varies in the distribution of the stamens, and in the lower spicula being simple.

44. *C. Hoodii* (Boott); spica ferruginea, c spiculis androgynis apice masculis 9–10 vel pluribus ovatis composita, spiculis in capitulum ovatum nudum vel bracteatum arcte congestis; stigmatibus 2; perigyniis ovatis rostratis acute bifidis, ore antice altius fisso, pallidis ferrugineo-tinctis demum utrinque nervatis marginibus acutis serratis, squama ovata acuta vel mucronata striato-nervata ferruginea nervo viridi margine albo-hyalina æquata longioribus.—*C. Hoodii*, Boott, Hook. Fl. Bor. Am. ii. 211. t. 211. *C. congesta*, Meyer (in Herb. Heward). (TAB. XLVI.)

HAB. In America septentrionali, ad ripas fl. Columbiæ, Douglas, Scouler; Kamtschatka, Meyer; California, in paludosis, Thurber, n. 15.

Culmus $\frac{1}{2}$ –2-ped., inferne foliatus, superne nudus, acutangulus, scaber, basi rudimentis foliorum atro-purpureis tectus. *Folia* 1– $1\frac{1}{2}$ lin. lata, partem inferiorem fere dimidiam culmi vaginantia, deorsum breviora: superius culmum æquans vel eo longius. *Spiculae* 3–4 lin. longæ, basi 2–3 lin. latae, in capitulum ovatum 8–10 lin. longum, 5–6 lin. latum, arcte congestæ, basi squamis hispido-cuspidatis suffultæ. *Squamæ* conformes, acutæ vel mucronatæ. *Perigynium* $1\frac{8}{10} - 2\frac{2}{10}$ lin. longum, $\frac{8}{10}$ lin. latum. *Achenium* $\frac{8}{10}$ lin. longum, $\frac{6}{10}$ lin. latum, orbiculatum, basi productum, lenticulare, basi styli (in speciminibus e California) incrassata, decidua.

The specimens figured are those from the Columbia, in which the perigynia are not mature, and show scarcely any indications of nerves. Dr. Torrey has since sent me specimens gathered by Thurber in California, in which the nerves are distinct, and the base of the style incrassate; the stem is shorter than in the Columbia species.

I named this species after the amiable Lieutenant Hood, the companion of Sir John Franklin and Sir John Richardson. It may prove to be the *C. anthericoides* of Presl, with which it agrees, except that the spiculae cannot be said to be "oblong-lanceolate." It is allied to *C. fœtida* and *C. curaica*, Kunth, differing from the former in a less attenuated rostrum and a serrated perigynium, and from the latter in the acutely bifid perigynium. I observe a specimen in the herbarium of Mr. Heward, named *C. congesta* by Meyer; I am not aware of his having published it.

45. *C. exilis* (Dewey); spica simplici cylindrica dioica, vel androgyna basi vel omnino mascula, vel e spiculis 2–6 fœmineis, terminali oblonga basi coaretato-sterili, reliquis brevioribus paucifloris contiguis sessilibus composita; stigmatibus 2; perigyniis ovatis vel lanceolatis plus minus longe rostratis bidentatis plano-

convexis denum horizontaliter patentibus superne subalatis serratis antice plus minus leviter nervatis pallidis ferrugineo-tinctis, squama ovata acuta vel obtusissima ferruginea margine albo-hyalina subæquilata longioribus.—*C. exilis*, Dewey, Sill. xiv. 351 (1828); Kunth, 419; Tor. Mon. 387; Carey, l. c. 509; Sartwell, Exs. n. 2. (TAB. XLVII.)

HAB. In America septentrionali. Massachusetts to New Jersey, in swamps and wet meadows.

Cæspitosa. *Culmus* 1–2-ped., filiformis, rigidus, obtuse triquetus, sulcatus, glaber, vel apice scabriusculus, basi vaginis longis ferrugineis fibrilloso-laceratis tectus. *Folia* basi involuta, filiformia, rigida, culmo breviora. *Spica mascula*, vcl, ex eadem radice, androgyna, apice extremo, vel rarius versus apicem fœminea, 5–15 lin. longa, $1\frac{1}{2}$ lin. lata. *Spica fœminea* solitaria, vel e spiculis 2–5 composita: terminalis oblonga, 6–10 lin. longa, 3–4 lin. lata, basi e squamis pancis vacuis arcte amplectentibus coarctata: reliquæ minores, 2–5 lin. longæ, 2–3 lin. latae, omnes contiguæ, sessiles, nudæ, vel infima rarius breve bracteata. *Squamæ* ferrugineæ, margine late albo-hyalinæ: *masculæ* obtusæ vel acutæ; inferiores sæpe latiores: vel omnes lanceolatae, acutæ: *fœmineæ* late ovatae, omnes acutæ, vel inferiores obtusissimæ, nervo infra apicem evanescente; superiores angustiores, acuminate, acutæ; infima rarius spiculæ inferioris apice breve cuspidata. *Perigynium* $1\frac{6}{10} - 2\frac{2}{10}$ lin. longum, $\frac{6}{10} - \frac{9}{10}$ lin. latum, plus minus rostratum: ad basin spiculæ *latius*, rostro $\frac{2}{10} - \frac{3}{10}$ lin. longo; ad apicem *angustius*, rostro $\frac{5}{10}$ lin. longo; antice plus minus leviter nervatum, nervis lateralibus obsoletis, vel superne evanidis; postice enerve, vel basi striato-nervatis: pallide viride, medio vel apice ferrugineo-tinctum, ore ad margines albo-hyalino: superne anguste alatum: sursum e medio margine serratum, demum horizontaliter divergens: plano-convexum, basi spongiosum, turgidum, marginibus rectis, vel minime spongiosum, marginibus tenuibus sæpe revolutis. *Achenium* $\frac{8}{10}$ lin. longum, $\frac{6}{10}$ lin. latum, ovatum, basi productum, ferrugineum. *Stylus* inerasatus, deciduus.

This species was founded by Dewey on specimens discovered by Mr. Oakes, in Massachusetts, all of which were of one spicula, male or androgynous, and female, and it was placed among the *Psyllophoræ*. Since 1828 other specimens have been found, especially by Mr. Knieskern in New Jersey, more evolute, with three to six female spiculae, the terminal one, as in the solitary female, sterile at base, and two to five contiguous smaller ones. The existence of these distinct spiculae necessarily separate the species from the *Psyllophoræ*. It proves the correctness of the remark of Drejer, that that artificial group is to be considered as "formæ hebetatae Caricum; monostachya incipiunt, evaduntque ploystachya." The evident affinity of *C. exilis* is with the *Stellulatae*, and from its dioicus character it is allied to *C. sterilis*, in which I observe the same modification in the form and substance of the base of the perigynium, either turgid and spongy, with obtuse margins, or with no spongy substance interposed; the margins thin and acute. It is this last form which I think induced Tuckerman's remark as to *C. sterilis*: "Species," he says, "michi bona, non modo habitu insigni et historia, sed etiam perigyniis distincta."

I have not observed any antheræ or trace of filaments at the base of the terminal female spicula, nor any male or androgynous spiculae on the same root with the female ones; but with the male spicula, simple androgynous ones are associated on the same root. In two specimens only, out of very many I have examined, there is an appearance as if the terminal spike occasionally was male, with the rudiment of a female one, or with two females at its base; but on close observation several of the scales on one of the specimens, and all on the other are sterile, showing no trace of anthers or perigynium.

46. *C. amplifolia* (Boott); spicis 5–6 cylindricis elon-

gatis erctis remotis ferrugineis, terminali mascula pedunculata, reliquis foemineis alternis evaginatis, suprema subsessili, inferioribus pedunculatis densifloris vel basi interrupte laxifloris, infima longe lateque bracteata; stigmatibus 3; perigyniis turgide ovalibus ventricosis rostratis, ore membranaceo integro oblique secto, enerviis glabris divergentibus olivaceis vel ferrugineis, rostro pallido, squama oblonga emarginata cuspidata ferruginea, medio late pallida latioribus longioribusque.—C. amplifolia, *Boott, Hook. Fl. Bor. Am.* ii. 228. t. 226. (TAB. XLVIII.)

HAB. In America septentrionali. Marshy places on the Columbia River, *Douglas*. Thickets in rich mould on the fertile plains, above Colville, Upper Columbia, *Geyer*, n. 573.

Culmus 2½-ped., triqueter, validus, scabriuscus; pars spicas gerens 15 poll. longa. *Folia* 5–6 lin. lata, culmo longiora. *Bractea* infima 4–5 lin. lata, culmo longior: superiores eo breviores: summa setacea, spica sua brevior. *Ligula* ferruginea, amplectens. *Pedunculi* 6–14 lin. longi, glabri. *Spica mascula* 2½ poll. longa, 2 lin. lata, ferruginea, pedunculata. *Spicæ foemineæ* 1½–3½ poll. longæ, 2–3 lin. latæ, a se ½–4 poll. remotæ, obtusæ, densifloræ vel basi laxifloræ. *Squamæ masculæ* obtusæ, muticæ, nervo infra apicem evanescente, ferrugineaæ, margine pallidæ: foemineæ emarginatae, inferiores longius cuspidatae, summæ rarius muticæ. *Perigynium* 1–1½ lin. longum, 7–10 lin. latum, rostratum: rostro basi pallido, apice ferrugineo: ore membranaceo, obliquo, integro, facile rupto: cernue, nisi nervis 2 marginalibus, glabrum, reticulato-membranaceum. *Achenium* 8–10 lin. longum, 5–6 lin. latum, ovale, triquetrum, castaneum, angulis pallidioribus, basi styli apiculatum. *Stylus* supra basin incrassatus.

C. scabræ, Schw., affinis. Differt omnium partium glabritie; spicis longioribus, remotioribus; perigyniis cernuiis; squamis foemincis emarginatis, cuspidatis.

The specimens found by Douglas were too young to afford any satisfactory evidence as to the affinity of this species. Those from Geyer prove its close resemblance in habit to *C. seabrata*.

47. *C. crinita* (Lamarck); spicis 5–6 rarius 4–7 cylindricis pedunculatis nutantibus pallidis, terminalibus 1–2 masculis vel basi vel apice et basi masculis, reliquis foemineis saepe apice masculis alternatim approximatis densifloris crinitis evaginatis, inferioribus basi attenuato-laxifloris saepe pendulis; bracteis inferioribus culmo multum longioribus; stigmatibus 2; perigyniis suborbiculatis vel obovatis vel ovalibus abrupte vel sensim rostellatis, ore integro minimo, breve stipitatis ventricosis cernuiis divergentibus pallidis demum ferrugineis, squama oblonga emarginata vel truncata vel acuta ferruginea medio viridi nervata in aristam viridem ligulatam serratani longam horizontaliter patentem producta longioribus, infimis (aristâ) saepe duplo quadruplo brevioribus.—*C. crinita*, Lam. Enc. iii. 393; Willd. iv. 300; Kunth, 415; Muhl. 229; Elliott, ii. 536; Dewey, l. c. x. 270, var. β; Schw. et Tor. 360; Tor. Mon. 400; Darlington, 348; Carey, l. c. 519; Sartwell, Eas. n. 58. *C. leonura*, Wahl. Act. Holm. p. 161 (1803). (TAB. XLIX.)

β. minor.—Schk. f. 164, t. t. t.; Sartwell, Eas. n. 78. *C. gynandra*, Tuckerman, aliorum (ex parte). *C. crinita* γ, Tor. Mon. 401?

HAB. In America septentrionali. Canada to Georgia.

Culmus 2½–4-ped., acute triqueter, apice scaber, validus, rigidus, superne filiformis, basi rudimentis foliorum fuscis vaginatisque ferrugineis reticulato-fassis tectus, inferne foliis longe vaginatis vestitus, superne nudus, vaginis foliorum glabris; pars spicas gerens 4–9 pollies longa. *Folia* 2–4 lin. lata: superiora culmo longiora. *Bractea* infima latior, 2–4 lin. lata: inferiores culmo multum longiores: summa saepe setacea, spica sua brevior: omnes evaginatae, vel infima rarius vaginata. *Ligula* infima discreta, rotundata, obtusa, ferruginea, apice folio impressa. *Pedunculi* ½–2 poll. longi, filiformes, scabri. *Spicæ masculæ* 1–2-pedunculatae, nutantes: terminalis 1½–3 poll. longa, 1–2½ lin. lata, altera proxima, brevior, bracteata: vel terminalis saepe apice et basi mascula: altera omnino vel basi mascula. *Spicæ foemineæ* saepius 4 vel 3–5, approximatae, 1–3½ poll. longæ, 2–2½ lin. (vel ex apicibus aristarum 5–6 lin.) latae: superiores vel omnes saepe apice masculæ: infima 2–4 poll. remota, in uno specimine vaginata (vagina pollicem longa): densifloræ: insigne comosæ. *Squamæ masculæ* saepe angustiores, aliter omnes conformes, longe aristatae. *Perigynium* 1–1½ lin. longum, 8–1 lin. latum. *Achenium* saepius pravum, uno latere vel utrinque incisum, vel interdum, e medio transversc cavato, incurvatum.

β. minor; spicis 4–5 vel 6–7 oblongo-cylindricis 1–2-pollicariibus, erectis vel nutantibus, terminali apice vel apicem et basi sparse rarius omuino mascula, reliquis foemincis, vel apice parce masculis, saepe sublaxifloris; perigyniis orbiculatis, abrupte rostellatis, ore integro vel leviter emarginato, ventricosis cernuiis, squama oblonga truncata vel emarginata vel acuta plus minus aristata longioribus vel brevioribus, infimis (aristâ) saepe duplo triplo brevioribus; vaginis foliorum glabris; culmo breviori graciliori; foliis bracteis angustioribus.

From the description of this species by Lamarck, I think the plant described above is his *C. crinita*. The expressions "spicis crinitis," "écailles ouvertes," "capsules arrondies, ovales," apply to it more closely than to the following species. But it is not easy to quote its synonymy in all authors, as both, I have no doubt, have been included under *C. crinita*. Schk. f. 125, I think, belongs to *C. gynandra*, which is the *C. crinita* of Dewey, the present plant being his var. *paleacea*. Willdenow first quoted the *C. paleacea* of Wahlenberg as a synonym to *C. crinita*, Lam., probably induced by the description and the country referred to. But the expressions "ore emarginato" and "culmo laxe," used by Wahlenberg, might have suggested some doubt of the accuracy of the reference, as neither applies to *C. crinita* or to *C. gynandra*, if this last be Willdenow's plant, as I suppose it to be that of Schkuhr. All doubt however on the subject has been removed by Wahlenberg himself, who gave to Mr. Tuckerman a specimen of his *C. paleacea*, from North America, which in no respect differs from *C. maritima*. I have the specimen before me, and it is identical with those brought by Drummond from Hudson's Bay. Upon what characters Wahlenberg distinguished the two plants, I am at a loss to conjecture from his descriptions. The serratures on the female scale (in the figure, Tab. XLIX.) have escaped my observation.

48. *C. gynandra* (Schweinitz); spicis 4–6 cylindricis pedunculatis nutantibus, terminalibus 1–2 rarius masculis saepius apicem et basi vel medio vel basi masculis, reliquis 3–4 foemineis, superioribus vel omnibus apice masculis alternatim approximatis laxiuscule imbricatim multifloris, saepe basi magis crinitis evaginatis, infima basi attenuato-laxiflora interdum remota longissime pedunculata pendula vaginata; bracteis inferioribus culmo longioribus; stigmatibus 2; perigyniis ovatis vel ellipticis sensim rostellatis, ore integro minimo, breve stipitatis ventricosis basi obsolete vel leviter nervatis oblique ascendentibus demum flavidis, squama lanceolata acumini-

nata vel emarginata ferruginea medio viridi nervata plus minus longe aristata longioribus vel subæquantibus, infimis (aristâ) saepe plus duplo brevioribus; vaginis foliorum scabris.—*C. gynandra*, Schw. *An. tab.* C. *crinita*, Schk. f. 125, e. e. c.; Dewey, l. c. x. 270 (*fide spec.*). *B. gynandra*, Schw. *ct Tor.* 360; *Tor. Mon.* 401; *Carey*, l. c. var. ii. 519. (TAB. L.)

HAB. In America septentrionali. Connecticut to New York.

Culmus, folia, bractæ ut in C. crinita, nisi ligula infima elongata, folio impressa, vaginæque foliorum asperatae! *Pedunculi* plerumque longiores, interdum glabri. *Spicæ masculæ* $1\frac{1}{2}$ –2 poll. longæ, 1– $1\frac{1}{2}$ lin. latæ, vel androgynæ breviores. *Spicæ fœmineæ* saepius 3, $1\frac{1}{2}$ – $3\frac{1}{2}$ poll. longæ, 4 lin. (vel ex apicebus aristarum basi 5–7 lin.) latæ, plerumque basi magis eomosæ. *Squamæ* maseulæ lanceolatae, acutæ, plus minus euspidatae, saepe muticæ; vel latiores, obtusæ: fœmineæ lanceolatae, adscendentes: inferiores longius aristatae, magis apertæ: superiores saepe breve cuspidatae, perigynio breviores vel subæquantes. *Perigynium* $2-2\frac{2}{5}$ lin. longum, $\frac{8}{10}$ –1 lin. latum, ovatum vel ellipticum, laxiuscule imbricatum, oblique adscendens, magis grosse granulatum, demum interdum ferrugineo-punctatum, saepe tenuiter nervatum. *Achenium* $\frac{9}{10}$ –1 lin. longum, $\frac{7}{10}$ lin. latum, obovatum, basi styli apiculatum, saepe, sed rarius quam in *C. crinita*, pravum.

A *C. crinita*, Lam., differt vaginis foliorum scabris!; spicis fœmineis latioribus, magis laxis; perigyniis ovatis vel ellipticis, majoribus; squamis fœmineis plerumque longioribus, minus patentibus, superioribus breve euspidatis, maseulis saepe muticis.

I had separated this plant from *C. crinita* some years ago, and had alluded to it under the name of *C. asperata*; but on reference to the monograph of Schw. and Tor., I cannot doubt that it is their *C. crinita*, *B. gynandra*, and therefore the *C. gynandra* of Schw. *An. tab.*, as stated subsequently by Torrey in his *Mon. p. 401*. It is remarkable that no one has noticed the scabrous vaginæ of the leaves, a character which of itself may serve to distinguish it from *C. crinita*, as *C. Hitchcockiana* is distinguished from *C. oligocarpa*. I have no other authority for its range than the specimens in my herbarium. It is probably more limited than *C. crinita*.

49. *C. Houghtonii* (Torrey); spicis 4–5 rarius 3–6 subapproximatis erectis, masculis 2 vel 1–3 oblongis purpureis demum pallidis, reliquis 2–3 rarius 1–4, fœmineis subcrassis olivaceis demum ferrugineo-purpureis alternis, superioribus oblongis sessilibus vel omnibus cylindricis subsessilibus densifloris evaginatis, infima rarius remota exserte pedunculata, bracteis foliaceis planis culnum subæquantibus; stigmatibus 3; perigyniis turgide ovalibus sensim plus minus rostratis bicuspisdati undique lucide setosis crebre valide nervosis olivaceis demum ferrugineo-purpureis, squama ovata obtusa vel lanceolata acuta cuspidata purpurea medio pallida margine albida latioribus longioribusque.—*C. Houghtonii*, *Torrey, Mon.* 413; *Dewey, Sill.* xxx. 63. (*non Sartwell, Eas. n.* 130, quæ *C. striata*, *Mich.*) (TAB. LI.)

HAB. In America Boreali. Lake La Biche, Dr. Houghton. Methye Portage, Sir John Richardson.

Stolonifera. *Culmus* 9–12-poll., strictus, rigidus, validus, acutangulus, seaber, basi rudimentis foliorum brevibus fusco-purpurcis vaginisque reticulato-fissis tectus; foliisque vaginætibus usque ad medianam partem vestitus; pars spicas gerens 2– $4\frac{1}{2}$, rarius 8 pollices longa. *Folia* $1\frac{1}{2}$ – $2\frac{1}{2}$ lin. lata, culnum subæquantia vel eo-breviora, plana, firma. *Bractæ* 1–2 lin. latæ,

planæ, culmum subæquantes, vel inferiores eo paulo longiores: suprema nunc setacea, spica sua brevior: omnes evaginatæ, vel infima rarius vaginata. *Vagina* 6–14 lin. longa. *Ligula* rotundata, purpurea, amplectens. *Pedunculus* infimus 3–5 lin., rarius $1\frac{1}{2}$ poll. longus. *Spicæ masculæ* 2, rarius 1–3 contiguæ, spieis fœmineis approximatæ, vel 1– $1\frac{1}{2}$ poll. ab iis remotæ: terminalis subpollicaris, 2 lin. lata, rarissime basi mascula: aliæ minores, 4–7 lin. longæ, 1– $1\frac{1}{4}$ lin. latae, sessiles: infima saepe braetæ squamæformi vel setacea spica sua breviori suffulta. *Spicæ fœmineæ* 2 vel 3, rarius 4, densifloræ, 5–14 lin. longæ, 3–4 lin. latæ, alternae, approximatæ: superiores oblongæ, sessiles: inferiores (vel omnes) cylindricæ, breve pedunculatae, evaginatae, vel infima 2–4 pollices remota, vaginata. *Squamæ* maseulæ purpureæ vel castaneæ, margine albo-hyalinæ, apice ciliatæ: inferiores obtusæ: superiores abrupte brevi-acuminatae: vel omnes lanceolatae, acutæ, euspidatae: fœmineæ ovatae, acuminatae, acutæ, vel obtusæ, plus minus euspidatae, purpureæ, medio pallidæ, margine albo-hyalinæ. *Perigynium* $2\frac{4}{5}-\frac{8}{10}$ lin. longum, $1\frac{3}{10}-\frac{4}{10}$ lin. latum, turgide ovale, plus minus cylindro-rostratum; rostro $\frac{1}{10}-\frac{4}{10}$ lin. longo, medio purpureo; bifurcatum, laciniis lanceolatis, acutis, undique pilis setosis lueidis saepe purpureis asperatum, erubre valideque nervosum, olivaceum, demum ferrugineo-purpurascens. *Achenium* $1\frac{9}{10}-\frac{3}{10}$ lin. longum, $\frac{7}{10}-1\frac{1}{10}$ lin. latum, late obovatum, trigonum, olivaceum, obtusum, basi styli æquali abrupte apiculatum.

In 68 specimens I find—

11 with 3 spikes.	16 with 1 male.	1 with 1 female.
28 "	40 "	2 males.
27 "	11 "	2 females.
2 "	3	
—	20 "	3
68	67	4
		—
		68

In one the terminal spike is male at base.

A *C. striata*, Mieh., differt culmo foliisque brevioribus, ligula rotundata; spieis maseulis, saepius 2; squamis apice ciliatis, saepe euspidatis, fœmineis saepius 2, interdum 3–4, magis approximatis, densifloris; squamis nunquam emarginatis nee muticis; perigyniis potius setosis quam pubescens; laeiniis lanceolatis nee lobatis, demum ferrugineo-purpureis.

50. *C. siccata* (Dewey); spica oblonga pallide ferruginea demum straminea concolori, c spiculis 4–12 pluribusve composita, spiculis simplicibus parvis ovatis, *mcclis* plerumque masculis, *extremis* fœmineis vel apice masculis arcte congestis, vel inferioribus remotiusculis; bracteis squamæformibus, infimis breve cuspidatis; stigmatibus 2 longis; perigyniis ovalibus vel ovatis longe rostratis bifidis, ore antice altius fisso, utrinque nervatis margine alatis inæqualiter serratis pallidis plano-convexis, squama ovato-lanceolata acuta ferruginea margine late albo-hyalina demum straminea paulo longioribus vel subæquantibus.—*C. siccata*, Dewey, *Sill.* x. 278. (1826); Hook. *Fl. Bor. Am.* ii. 212; *Tor. Mon.* 391; *Carey*, l. c. 511; *Sartwell, Eas. n.* 11. *C. pallida*, *Meyer, Mem. Ac. St. Pet.* i. 215. t. 8 (1831). *C. Liddoni*, *Carey*, l. c. cd. 1. p. 545; *Dewey, Wood. Bot.* 581; *Sartwell, Eas. n.* 40 (*non Boott*). (TAB. LII. et TAB. CXLVI., *perigynium*.)

HAB. In America septentrionali et orientali. On the Pacific coast, from the Columbia to California, and from the Rocky Mountains and British America to New England, Michigan and Illinois. In Kamtschatka, *Meyer*. “Ad Thermas Turkenses, *Turcz.*” (Herb. Hooker).

Rhizoma repens, rudimentis foliorum fusco-striatis demum fibratis undique teatum, culmos 1–2 poll. distantes præbens. *Culmus* $\frac{1}{2}-1\frac{1}{2}$ -pedalis, gracilis, debilis, apice acutangulus, seaber,

basi rudimentis foliorum fuscis teetus, sursum foliis vaginatis vestitus, superne nudus. *Folia* 1-1½ lin. lata, scabra, superiora culmo longiora vel breviora. *Bracteæ* squamæformes: infimæ hispido-cuspidatae, rarius spiculis suis longiorces. *Spica* 9 lin. ad 2 poll. longa, 2-4 lin. lata, saepe medio angustata. *Spiculae* 4-12 vel plures, 2-5 lin. longæ, 1-4 lin. latæ, distributione numeroque staminum variables: saepius mediæ masculæ, summa et inferiores apice masculæ, vel foemineæ: omnes arete congestæ, vel inferiores distinctæ vel subremotæ. *Squamæ* conformes. *Perigynium* 2 $\frac{2}{10}$ - $\frac{6}{10}$ lin. longum, $\frac{8}{10}$ -1 lin. latum, longe rostratum, rostro saepe ferrugineo, ore margine albo-hyalino antice altè fiso, plano-convexum, antice æqualiter 7-9-nervium, postice nervis paucioribus saepe minus prominentibus margine alatum, inæqualiter serratum. *Achenium* lineam longum, $\frac{3}{10}$ lin. latum, plano-convexum, ferrugineum, basi styli æquale apiculatum.

This species, which is so widely diffused in the northern states, I have not seen till lately with any mature perigynia. The figure Tab. LIII. was drawn from immature specimens, and does not exhibit the length to which the rostrum attains nor the number of nerves on the mature perigynium (see Tab. CXLVI., where it is figured). Meyer's figure is equally imperfect. The specimen from him and from Turczaninoff in Herb. Hooker are identical with American ones. The species extends from the Columbia River to California on the Pacific coast, and from the Rocky Mountains through British America to Michigan and Illinois and New England. Dr. Barratt finds it in sandy soil on pine plains. It is allied to *C. arenaria*, but is smaller in all its parts, with a longer rostrum, and a continuation of the winged margin to the base of the perigynium.

51. *C. Liddoni* (Boott); spica oblonga ferrugineo-albida, e spiculis 6 androgynis basi subdimidiatim maseulis ovalibus eontiguis simplieibus composita; stigmatibus 2; perigyniis lanceolatis acuminato-rostratis antice altius fissis bifidis alatis serrulatis leviter nervatis eompressis laxe imbricatis superne medio ferrugineis, squama lanceolata acuminata aeuta vel euspidata læte ferruginica margine albo-hyalina nervo scabro paulo longioribus vel subæquantibus.—*C. Liddoni*, Boott, Hook. Fl. Bor. Am. ii. p. 214. t. 215 (non Carey, Dewey, Sartwell, Exs. n. 40, quæ *C. siecata*). (TAB. LIII.)

HAB. In Ameria septentrionali. Columbia River, Scouler.

Culmus 3-pedalis, apice acutangulus, scabriusculus, nudus; basi foliis 3-4 alternis vestitus. *Folia* 1½ lin. lata, culmo multum breviora, graminea. *Vaginæ* intus albo-membranaceæ, superne fissæ. *Spica* 1½ poll. longa, ½ poll. lata. *Spiculae* 6-7 lin. longæ, 3 lin. latæ, basi subdimidiatim masculæ, apice laxiusculæ foemineæ. *Squamæ* omnes lanceolatae, læte ferrugineæ, margine late albo-hyalinæ: masculæ obtusæ, nervo infra apicem hyalinam evanescente: foemineæ acutæ, acuminatae, vel breve cuspidatae, nervo viridi scabro. *Perigynium* 3 $\frac{7}{10}$ -4 lin. longum, lin. latum, pallidum, medio sursum ferrugineum. *Achenium*, cum stipite $\frac{3}{10}$ lin. longo, 1 $\frac{6}{10}$ lin. longum, $\frac{7}{10}$ lin. latum.

C. aridæ affinis. Differt spiculis paucioribus, minoribus, laxiusculis; squamis omnibus lanceolatis, ferrugineis; foemineis perigynia subæquantibus; achenio latiori; foliis gramineis; vaginis intus albo-membranaceis, fissis.

I have not seen other specimens than those originally brought by Dr. Scouler from the Columbia River; and future observation must determine whether the distinction between it and *C. arida* is valid. The foliation on the barren culms of *C. arida* is found equally on those of *C. lagopodioides*, and may exist in *C. Liddoni*. The difference in the vaginæ of the leaves is striking; those of *C.*

Liddoni, from the hyaline texture within, being easily ruptured, while those of *C. arida* are always entire.

52. *C. arida* (Sehw. et Tor.); spica elongata pallide flavide-viridi demum ferruginea eoncolori, e spieulis 8-10 androgynis ima basi masculis elliptico-cylindraeis utrinque acutis eontiguis simplieibus nudis composita; stigmatibus 2; perigyniis lanceolatis elongatis acuminato-rostratis bifidis antice altius fissis alatis eiliato-serratis leviter nervatis eompressis arcte imbriatis pallidis, squama ovato-lanceolata acuta margine albo-hyalina nervo glabro plus duplo longioribus.—*C. arida*, Schw. et Tor. 312. t. 24. f. 2; Carey, l. c. 515; Sartwell, Exs. n. 39. *C. Muskingumensis*, Schw. An. tab.; Dewey, Sill. x. 281. *C. scoparia*, Tor. Mon. 394 (ex parte); Tuck. En. 8-17, var. γ. (TAB. LIV.)

HAB. In Ameria septentrionali: in pratis, Ohio, Sullivant; Illinois, Mead.

Culmus 2½-3-ped., validus, rigidus, superne acutangulus, scaber, e basi ad partem tertiam superiorem foliis alternis vaginatis omnino tectus. *Folia* 2 lin. lata, rigida, erecta, apice attenuata, culmo breviora. In culmo sterili folia superiora alternatim magis magisque approximata, culmum omnino tegentia, apex vaginæ inferioris basin proximæ includens. Basis foliorum postice (e vagina integra oriens) lineâ acute angulatâ impressa. *Vaginæ* virides, striatae, integræ. *Ligula* pallida, angusta, arcte amplectens. *Spica* 2½-3 poll. longa, 6-8 lin. lata. *Spiculae* 8-14 lin. longæ, 2½-3 lin. latæ, ima basi attenuatae masculæ, utrinque acutæ, nudæ, vel infima rarius squamâ cuspidatâ, spiculam æquante, suffulta. In uno specimine spicula infima, 4 pollices remota, ab axilla folii superioris egrediens, pedunculo sesquipolllicari instructa, basi squamis sterilibus pluribus appressis alternis attenuata. *Squamæ* masculæ ovatae, obtusæ: foemineæ lanceolatae, acutæ, tenuissimæ, hyalino-albidæ, vel omnes pallide fulvæ margine hyalinæ; nervo viridi, glabro. *Perigynium* 4-5 lin. longum, $\frac{8}{10}$ -1 lin. latum. *Achenium* 1 $\frac{4}{10}$ lin. longum, $\frac{4}{10}$ lin. latum, lineare, plano-eonvexusculum, stipitatum, fuscum, punctulatum, basi styli apiculatum.

This fine species, which, from its resemblance in habit to *C. scoparia*, was at one time considered a variety of it by Torrey, appears confined to the Western States of North America. I have not seen it except from Ohio and Illinois.

53. *C. decomposita* (Muhlenberg); spica elongata basi interrupte ramosa pallide viridi demum olivacea vel ferruginea, e spiculis androgynis apice maseulis parvis ovatis numerosis eontiguis sessilibus decomposita, ramis subsesquipolliearibus omnino spieuliferis oblique adseen-dentibus, inferioribus breve setaeo-braeteatis; stigmatibus 2; perigyniis obovatis abrupte breve eonieo-rostratis bifidis olivaceis, marginibus supcrne acutis serratis rostroque viridibus, subbieonvexis vel plano-convexis luedis spongiosis, antice nisi medio saepe enerviis vel utrinque basi nervatis, nervis superne evanidis, squama ovata aeuta vel breve cuspidata pallide ferruginea nervo viridi demum pallida hyalina latioribus, paulo longioribus vel æquantibus.—*C. decomposita*, Muhl. l. c. 264; Dewey, Sill. xxv. 140; Carey, l. c. 511; Kunth, 390; Sartwell, Exs. n. 15. *C. paniculata*, var., Dewey, l. c. x. 276; Tor. Mon. 390. (TAB. LV.)

HAB. In Ameria septentrionali. New York, Sartwell. Ohio, Sullivant. Louisiana (in ponds), Carpenter.

Culmus 2-3-ped., triquetus, validus, seaber, basi foliosus.

Folia 2–4 lin. longa, culmo longiora. *Bracteæ* setaceæ, breves, sæpe obsoletæ. *Spica* 3–6½ poll. longa, apice 3–4 lin., basi 6–12 lin. lata: inferne interrupte ramosa: rami $\frac{1}{2}$ – $1\frac{1}{2}$ poll. longi, cylindrici, omnino spiculiferi, erecti. *Spiculae* 2–3 lin. longæ, 2 lin. latae, arcte contiguæ, sessiles. *Perigynium* 1– $1\frac{2}{5}$ lin. longum, $\frac{6}{10}$ – $\frac{8}{10}$ lin. latum. *Achenium* $\frac{7}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, obovatum, basi productum, ferrugineum.

The form of the perigynium sufficieutly distinguishes this species from the *C. paniculata* of Europe. I have seen no specimens north of New York.

54. *C. Torreyi* (Tuckerman); spicis 3–4 abbreviatis oblongis castaneis demum ferrugineis, terminali mascula sessili, reliquis fœmineis evaginatis sessilibus contiguis vel infima subremota breve pedunculata; bracteis culmo brevioribus; stigmatibus 3; perigyniis obovatis obtuse triquetris abrupte cylindrico-rostellatis, ore albo-hyalino integro, valide nervatis punctatis, squama ovata acuta vel obtusa cuspidata pallide ferruginea margine albo-hyalina apice ciliata subæquilata longioribus; culmo foliisque hirsutis.—*C. Torreyi*, *Tuck. En. Method.* 21 (1843); *Carey*, 521. *C. abbreviata*, *Schweinitz*, n. 55 (*Herb. Kunze!*); *Boott*, *Lin. Trans.* xx. 141 (1846). (TAB. LVI. Fig. 1.)

HAB. In America Boreali. Bethlehem, Pennsylvania, *Schw.* (*Herb. Kunze*). New York, *Torrey* (*Herb. Hooker and Durand*). Carlton House, *Richardson* (1827).

Culmus 1– $1\frac{1}{2}$ -ped., acute triqueter, apice scaber, hirsutus, rigidus, basi foliatus, rudimentisque foliorum purpureis tectus; pars spicas gerens 1–2 poll. longa. *Folia* 1– $1\frac{1}{2}$ lin. lata, culmo breviora, firma, hirsuta; *radicalia* elongata. *Bracteæ* breves: infima rarius culmo paulo longior: evaginatae. *Pedunculus* infimus nunc 1–4 lin. longus. *Spica mascula* 3–8 lin. longa, 1– $1\frac{1}{4}$ lin. lata, subscissilis. *Spicae fœmineæ* 3–6 lin. longæ, 2– $2\frac{1}{2}$ lin. latae: omnes masculæ contiguæ, sessiles, vel infima longior $\frac{1}{2}$ –1 poll. remota. *Squamæ* apicem ciliatae: masculæ lanceolatae, acutæ, sæpe cuspidatae, nervo apice scabro, stramineæ, margine albo-hyalinæ: fœmineæ latiores, obtusæ, vel brevi-acuminatae, cuspidatae. *Perigynium* 1– $1\frac{4}{5}$ – $1\frac{7}{10}$ lin. longum, $\frac{8}{10}$ – $\frac{9}{10}$ lin. latum (sub lente), lucide, demum ferrugineo-punctatum; ore ciliato. *Achenium* 1– $\frac{3}{5}$ lin. longum, $\frac{8}{10}$ lin. latum, obovatum, trigonum, basi styli apiculatum. *Stylus* supra basin brevis, crassus.

I first recognized this species in March 1843, in *Herb. Fielding* (*olim* *Prescott*), where I found it without a habitat, under the name of *C. abbreviata*, supposing it had been so named by *Prescott*, and that it was probably a plant from the Altai. In copying out the descriptions for the Paper in the Linnaean Transactions in 1846, I was wholly unconscious that I had the plant in my own herbarium, or that *Tuckerman*, who had discovered it in the herbarium of Sir W. J. Hooker, had described it as early as 1843 in his ‘*Enumeratio Methodica*.’ In my own and Sir William’s herbarium it had been left unnoticed, through my carelessness, among many loose specimens of *C. pallescens* from Arctic America; but Sir William had also received it from New York from Dr. *Torrey* as *C. pallescens*, and *Tuckerman* consequently gave it that locality, as well as Carlton House. There was no question as to the correctness of the last habitat from the specimens brought in 1827 by Sir John Richardson; but doubts were entertained of the former, as Dr. *Torrey* had no specimen in his herbarium, and was unconscious of having seen the plant. None of the American botanists had met with it. Mr. *Curtis* however, in 1848, informed Dr. *Gray* in a letter, that, in looking over the *Cyperaceæ* of Mr. *Durand* of Philadelphia, he had found *C. Torreyi*, sent to Mr. *D.* by Dr. *Torrey* as *C. pallescens*. But the most curious part of its history is that, in 1849, *Tuckerman* found it in the herbarium of Prof. *Kunze*, at Leipsic, sent by *Schweinitz* from Bethlehem, Pennsylvania, as “*C. abbreviata*, *Schweinitz*, n. 55.” That this was the source whence *Prescott* received his specimen, the name

it bore would reuder all but certain. It is remarkable that *Schweinitz* had preserved no specimen in his own herbarium and no indication in his MSS. of the name he had originally given to it. I am not aware that any one has found it in the States siuce *Schweinitz*.

Tuckerman places *C. Torreyi* among his *Montanæ*, but doubting whether it may not belong to the *Laxifloræ* of *Kunth*, in which he includes *C. pallescens*. They both belong to the same group, and though very distinct from each other, are yet closely allied. They have the same inflorescence, scales, bracts, ferruginous spots on the perigynium, achenium, and both are hirsute. The perigynium of *C. pallescens* is inflated, and less perceptibly triquetrous, but has at times a distinct though very short, abrupt rostrum, with an entire orifice. I think *Carey* is correct in placing it among the *Paniceæ*, next to *C. pallescens*.

55. *C. alveata* (Boott); spicis 2–5, terminali mascula cylindrica sessili, altera minori rarius ad ejus basin arcte contigua, reliquis 1–3 fœmineis, superioribus (rarius omnibus) apice masculis oblongis masculæ arcte contiguæ sessilibus, inferioribus vaginatis, infima basi attenuata remota exserte pedunculata; bracteis culmum subæquantibus; stigmatibus 3; perigyniis (immaturis) ovalibus obtusis vel rostellatis olivaceis, ore integro, crebre costato-nervosis granulatis, squama lata ovato-lanceolata acuminatea cuspidata castanea medio 3–4-nervata pallida angustioribus brevioribusque.—*C. alveata*, *Boott*, *Journ. Nat. Hist. Boston*, v. (1845). (TAB. LVI. Fig. 2.)

HAB. Texas, *Drummond*, coll. 3. n. 440, 441. Louisiana, Arkansas, *Leavenworth* (*Herb. Carey*).

Radix repens, stolonifera. *Culmus* subpedalis, firmus, apice acutangulus, scaber, granulatus, basi foliatus; pars spicas gerens 3–5 poll. longa. *Folia* 1– $1\frac{1}{2}$ lin. lata, culmum subæquantia vel eo breviora, plana, marginibus revolutis, rigida. *Bracteæ* inferiores vaginatae, culmum subæquantes: superiores squamæformes, cuspidatae. *Vagina* infima 4–7 lin. longa. *Pedunculus* infimus 1– $1\frac{1}{2}$ poll. longus, scaber. *Spica mascula* pollicaris, 2 lin. lata, sæpius sessilis; altera minor, rarius arcte contigua. *Spicae fœmineæ* superiores (rarius omnes) apice masculæ, 6–12 lin. longæ, 1–2 lin. latae, erectæ: inferiores a se 2–3 poll. remotæ, exserte pedunculatae. *Squamæ* omnes medio granulatae: masculæ ferrugineæ, margine hyalino-albidæ, obtusæ, muticæ, vel inferiores lanceolatae, acutæ, nervo viridi infra apicem evanescente vel in superioribus extra producto: infima cuspidata: fœmineæ latae, ovato-lanceolatae, castaneæ, basi medioque 3–4-nervatae, pallidæ: inferiores vel omnes acuminatae, longe cuspidatae, vel superiores breviores, ovatæ, nervo vix vel paulo extra apicem producto. *Perigynium* 1– $\frac{9}{10}$ lin. longum, costato-nervosum; nervis albidis, ore pallidiore. *Achenium* 1– $\frac{3}{5}$ lin. longum, $\frac{1}{2}$ lin. latum, oblongo-triquetrum, basi styli æquali.

Drummond’s specimens are not fully mature, and those in the herbarium of Mr. *Carey* are too young to afford a satisfactory character. All parts of the plant are granulated. I cannot refer it to any known American species. *C. microdonta*, *Torrey* says, has a bidentate orifice to the perigynium; but from specimens gathered by *Wright* in Texas, apparently referable to it, in *Herb. Carey*, it is slightly bifurcate. From *C. Crantzii* it is distinguished by the prominent nerves on the perigynium and female scales, and these last being broader, larger, and longer cuspidate.

56. *C. polymorpha* (Muhlenberg) (*C. Halseyana*, *Dewey*): spicis 3 rarius 2–4 ferrugineo-purpureis erectis, terminalibus masculis sæpe 2 vel 1 rarius 3, inferioribus oblongis contiguis sessilibus, fœmineis 1 rarius 2 interdum (vel suprema solum) apice masculis, brevi vel infima sub-remota plus minus longe exserte pedunculata, cylindricis

basi sublaxifloris rarius compositis; bracteis spicas subæquantibus; stigmatibus 3; perigyniis triquetro-ovalibus subturgidis cylindrico-rostratis, ore albo-hyalino alte oblique secto, papilloso-granulatis nervatis glaucis, rostro purpureo, squama obtusa rarius acuta purpurea margine plus minus albo-hyalina basi pallida trinervi subæquilata longioribus.—*C. polymorpha*, Muhl. 239 (*ex parte, var. 2*); *Carey*, 529. *C. Halseyana*, *Dewey*, *Sill. xi. 313*; *Carey*, *l. c. ed. 1. 560*; *Sartwell*, *Exs. n. 128*. *C. striata*, *Tor. N. York Fl. (side Carey, non Mich.)*. (TAB. LVII.)

HAB. In America Boreali. Massachusetts to New Jersey.

Culmus 1–1½-ped., firmus, strictus, acute triquetus, laevis, granulatus, basi foliatus, rudimentisque foliorum fusco-purpureis reticulato-fissis tectus; pars spicas gerens 2½–7 poll. longa. *Folia* 1–2 lin. lata, rigida, stricta, marginibus revolutis: *culmea* culmo multum breviora, *radicalia* eum subæquantia. *Bractea* brevis, erecta, spicam subæquans, infima rarius eâ longior. *Vagina* 5–12 lin. longa. *Pedunculus* ½–2 poll. longus. *Spicae masculæ* 6–13 lin. longæ, 1–1½ lin. latæ, terminalis longior: inferiores arete contiguæ, sessiles: infima saepe basi squama majori amplectente mutica vel cuspidata suffulta. *Spica fæminea* 10–16 lin. longa, 2–3½ lin. lata, inserta vcl potius brevi-exserte pedunculata, basi sublaxiflora: vel 2, infima 2–4 poll. remota, rarius basi composita, e raehi squamas et perigynia ferente, ab ore perigynii egrediente. *Squamæ* coniformes, obtusæ, rotundatae, purpureæ, basi pallidæ, trinerves: fœmineæ superiores, interdum acutæ. *Perigynium* 2–2½ lin. longum, ¾–1 lin. latum. *Achenium* 1½ lin. longum, ¾ lin. latum, oblongo-ovatum, triquetrum, fuseum, basi styli abrupte apiculatum.

As the *C. polymorpha* of Muhlenberg is admitted to have included *C. Halseyana* of Dewey, and what is now known to be the *C. striata* of Miehaux, I should have retained Muhlenberg's anterior name for this species, had I been aware of the fact when the Plate was printed. I should refer the second variety of Muhlenberg to *C. polymorpha* from his description. Dewey (*Sill. iii. 2 ser. 355*) ascribes a two-toothed orifice by mistake to it. Carey alludes to a form with a filiform, lax female spike, which possibly may throw some light on the obscure *C. refracta* of Schk., which Willdenow received from Muhlenberg.

The affinity of *C. polymorpha* is doubtful. Tuckerman did not distinguish it from *C. striata*, and associated it with *C. hirta*: this is untenable. I suspect it may prove an aberrant form of the *Paniceæ*.

57. *C. dasycarpa* (Muhlenberg); spicis 3–4 oblongis albidis, terminali mascula subsessili, reliquis fœmineis canis approximatis evaginatis vel infima subremota breve vaginata basi attenuata pedunculata; bracteis culmo longioribus; stigmatibus 3; perigyniis oblongo-ovalibus obtuse triquetris rostellatis, ore emarginato, pilis longis albis densissimis tectis, basi glabris, crebre inæqualiter nervosis, squama ovata cuspidata alba apice ciliata medio viridi trinervi longioribus; culmo foliis vaginisque pilosis.—*C. dasycarpa*, Muhl. 236; Elliott, ii. 541, t. 12. f. 4! Kunth, 429; Schw. et Tor. 331! Dewey, *Sill. xi. 148!* (TAB. LVIII.)

HAB. In America Boreali. North Carolina to Florida.

Culmus 8–18-poll., gracilis, pilosus, basi foliatus, rudimentis foliorum ferrugineis, vaginisque pilosis intus ferrugineo-punctatis tectus; pars spicas gerens 10 lin. ad 2½ poll. longa. *Folia* 1–1½ lin. lata, firma, plana: *culmea* vaginata, culmo breviora: *radicalia* eo longiora: omnia plus minus, præcipue basi marginibusque, pilosa: vaginæ semper pilosæ. *Bracteæ* evagi-

natae, vel infima vaginula 1–2 lin. longa prædicta, saepe culmo plus duplo longior; pilosæ. *Spica mascula* 5–8 lin. longa, ½–¾ lin. lata, interdum inconspicua. *Spicæ fæmineæ* 5–7 lin. longæ, 2–3 lin. latæ, 7–9-floræ, omnes approximatæ, sessiles, evaginatae, vel infima 1–1½ poll. remota, breve pedunculata, vaginulata. *Squamæ* albæ, medio virides; ciliatae: masculæ obtusæ vel acutæ: fœmineæ inferiores valide cuspidatae, superiores acutæ. *Perigynium* 2½ lin. longum, ¾ lin. latum. *Achenium* 1½ lin. longum, ¾ lin. latum, ovale, triquetrum, stramineum, basi styli apiculatum.

This species was found by Mr. Elliott in dry pastures on Paris Island, South Carolina, and was sent to Muhlenberg, who first described it. I have a specimen found by Baldwin on "Indian tumuli in Georgia," and it has been sent from Florida by Dr. Chapman. Elliott remarks that "the corolla is more villous" than that of any species he was acquainted with. The long white hairs are so dense as to conceal the texture of the perigynium. They, with the loose scattered hairs on the culm and leaves, contrast with the following closely allied species, *C. tenax*.

58. *C. aristata* (Brown); spicis 5–8 cylindricis erectis pallidis, terminalibus 3–4 rarius 5–6 masculis sessilibus alternis vel contiguis, infima bracteata saepe subremota, reliquis fœmineis crassis alternis basi attenuato-laxifloris, suprema sessili evaginata, inferioribus exserte pedunculatis, omnibus longe bracteatis; bracteis culmo longioribus subtus vaginisque hirsutis; stigmatibus 3; perigyniis ovato-lanceolatis sensim longe rostratis alte bicuspidiatis, laeiniis subulatis demum divergentibus, nervosis glabris, vcl rarius medio marginibus dentatis pallidis, squama ovata acuminata longe hispido-aristata pallida longioribus vel (aristâ) brevioribus.—*C. aristata*, Brown, *Frankl. Nar. App. 764* (1823), (*non Dewey*, *Sill. vii. 277*, quæ *C. Davisii*, *Tor.*), *Schw. et Tor. 364*; *Tor. Mon. 422*; *Gray*, *Lyc. N. Y. iii. 237*; *Dewey*, *Sill. xi. 161*; *Carey*, *l. c. 530*; *Sartwell*, *Exs. n. 132*. *C. atherodes*, *Spr. iii. 828*. *C. mirata*, *Dewey*, *Sill. xxvii. 240*, v. 49, 48; *Woods*, *Bot. (ed. 2) 593*. *C. orthostachys*, *Meyer?* *Fl. Alt. 4*; *Ledebour*, *Icon. t. 324*. (TAB. LIX.)

HAB. In America septentrionali. Carlton House, Lake Huron, *Sir J. Richardson*. Cumberland House, Drummond. Watertown, New York, *Crawe*.

Culmus 2–3-ped., triquetus, validus, glaber, superne scaber: basi rudimentis foliorum rubro- vel atro-purpureis vaginisque reticulato-fissis tectus, foliisque vaginantibus subtus vaginique hirsutis sursum vestitus; pars spicas gerens 8–14 poll. longa. *Folia*, bracteæque subtus, vaginæque hirsutæ. *Folia* 2–5 lin. lata, culmo longiora, nodosa. *Bracteæ* 1–4 lin. latæ, culmo longiores: inferiores plus minus (sæpe breve) evaginatae. *Vagina* infima 2–14 lin. longa. *Pedunculus* infimus 2–18 lin. longus. *Spicae masculæ* 1–3 poll. longæ, 1½–3 lin. latæ, interdum versus apicem vcl basi flosculis fœmineis paucis instructæ. *Spicæ fæmineæ* 1½–2½ poll. longæ, 4–6 lin. latæ: supremæ sessiles, evaginatae: inferiores plus minus exserte pedunculatae: vel omnes (2) sessiles, evaginatae: a se 2–4, vel infima 6 poll., remotæ. *Squamæ* omnes aristatae: masculæ angustiores, lanceolatae: fœmineæ ovatae, acuminatae, ferrugineæ, demum pallidæ. *Perigynium* 3–4 lin. longum, ¾ lin. latum, obtuse triquetrum, in rostrum longum sensim attenuatum, alte bicuspidatum; laeiniis subulatis, glabris (fere lineam longis), demum divaricatis; glaberrimum, rarius ad margines versus medium dentatum, nervosum. *Achenium* stipitatum, 1–2 lin. longum, ¾ lin. latum, triquetrum, basi styli recta vel obliqua apiculatum, interdum uno angulo indentatum.

The finest specimens I have seen of this species are those from

Arctic America, one of which, brought from Lake Huron by Sir John Richardson in 1849, is figured Tab. LIX. I cannot distinguish the *C. orthostachys* of Meyer from this species. I have not seen specimens from Lake Ontario, on which Dewey finds his *C. mirata*, but the plant described in Sill. xxvii. 240, is certainly that of Brown. In Wood's Bot. no mention is made of the hairy vaginæ and leaves, though reference is made to the plant described in Sill. as *C. aristata*, in which this important character is given.

59. *C. tenax* (Chapman); spicis 3–4 oblongis, terminali mascula oblonga vel cylindrica albida subsessili, reliquis foemineis griseo-viridibus densifloris sessilibus contiguis evaginatis, vel infima subremota pedunculata; bracteis culmum subæquantibus vel infima (*sterili*) eo longiori; stigmatibus 3; perigyniis ovalibus subacute triquetris rostellatis, ore pallido integro vel emarginato, pubescentibus basi glabris crebre inæqualiter nervosis, squama ovata acuta albida, medio viridi trinervi, latioribus longioribusque; culmo foliisque glabris.—*C. tenax*, Chapman, MSS.; Dewey, Sill. xviii. 254. C. Chapmani, Sartwell, Exs. n. 113. (TAB. LX.)

HAB. In America Boreali. Florida, Chapman. Georgia, Le Conte.

Culmus 12–15-poll., gracilis, firmus, basi foliatus, vaginisque pallidis scabriusculis tectus; pars spicas gerens 15 lin. $2\frac{1}{4}$ poll. longa. *Folia* lineam lata, culmo breviora, rigida, saepe involuta. *Bractæ* culmum subæquantes, evaginatæ, vel infima eo paulo longior, saepe sterilis, e spicis $1\frac{1}{2}$ poll. remota. *Spica mascula* 6–12 lin. longa, $1\frac{1}{4}$ lin. lata, subsessilis. *Spicæ fæmineæ* 6–7 lin. longæ, $3\frac{1}{2}$ lin. latæ, densifloræ, 12–15-floræ: omnes contiguæ, sessiles, vel infima $\frac{1}{2}$ –1 poll. remota, breve pedunculata. *Squamæ* omnes albæ, nervo viridi, acutæ, muticæ. *Perigynium* 2–2½ lin. longum, $1\frac{1}{10}$ lin. latum, ore pallido, viride, pubescens, basi glabrum, ferrugineum. *Achenium* $1\frac{8}{10}$ lin. longum, lineam latum, triquetrum, basi styli apiculatum.

C. dasycarpæ arcte affinis. Differt eulmo foliisque glabris (nec pilosis); vaginis foliorum seabriuseulis; spicis foemineis densi-plurifloris; perigyniis pubescentibus, acute triquetris; squamis acutis muticis nec ciliatis; foliis angustioribus saepe involutis.

Found by Dr. Chapman on sand-hills in Florida. With the exception of the larger spikes and the simply acute scales, the main difference between it and *C. dasycarpa* is the smoothness of the first as compared with the last, a character that will be more satisfactorily estimated when we are more familiar with *C. dasycarpa*. I have not seen perfectly mature specimens of the last. In both, but especially in *C. tenax*, when the achene is removed and the perigynium is held up to the light, it is found to be beset in the interstices between the nerves with ferruginous spots.

60. *C. pubescens* (Muhlenberg); spicis 4 rarius 5 pallidis demum pallide ferrugineis, terminali mascula oblonga vel cylindrica sessili, reliquis foemineis sublaxifloris oblongis contiguis sessilibus evaginatis vel infima cylindrica basi laxiflora brevi vel (rarius remota) longissime exserte pedunculata nutanti; bracteis culmo brevioribus vel infima eo paulo longiori; stigmatibus 3; perigyniis obovatis basi cuneatis acute triquetris longiuscule rostratis bidentatis enerviis pubescentibus, squama ovata obtusa truncata nunc emarginata apice ciliata albida demum pallide ferruginea cuspidata longioribus vel (infimis cuspidate) brevioribus, superioribus eam æquantibus.—*C. pubescens*, Muhl. 244; Willd. iv. 281; Schk. f. 126, c.c.e.;

Kunth, 455; Schw. et Tbr. 333; Dewey, Sill. ix. 73; Carey, l. c. 526; Sartwell, Exs. n. 112; Darlington, 351. (TAB. LXI.)

HAB. In America Boreali. Canada to Pennsylvania and Ohio.

Undique (præter squamas) molliter pubescens. *Culmus* 1–2-ped., debilis, demum saepe procumbens, basi foliatus, rudimentis foliorum foliisque longe vaginatis tectus; pars spicas gerens $1\frac{1}{2}$ –3 rarius 12 pollices longa. *Folia* $1\frac{1}{2}$ –4 lin. lata, culmo breviora, mollia, plana. *Bractæ* infima, vel foliacea, 1–2 lin. lata, culmo paulo longior; vel angusta, vel setacea, spica sua longior vel brevior: infima, rarius fere subradicalis, elongata, spicam longissime pedunculatam subæquans. *Pedunculus* 1–3 lin. vel rarius 6–8 poll. longus, gracillimus, debilis. *Spica mascula* 6–9 lin. longa, $1\frac{1}{2}$ lin. lata, sessilis, vel breve pedunculata. *Spicæ fæmineæ* 4–6 lin., vel infima (sæpe angustior) 10–12 lin., longæ, 2–3 lin. latæ, omnes contiguæ, sessiles, vel alternæ approximatæ: infima vel pollicem rarius 7–10 pollices remota, basi attenuata. *Squamæ* apice ciliatæ: *masculæ* obtusæ, cuspidatæ, vel muticæ: *fæmineæ* saepe truncatae, interdum emarginatae, cuspidatæ. *Perigynium* $1\frac{8}{10}$ –2 lin. longum, $1\frac{7}{10}$ – $1\frac{8}{10}$ lin. latum, membranaceum, achénium arcte vestiens. *Achenium* $1\frac{1}{10}$ – $1\frac{3}{10}$ lin. longum, $1\frac{7}{10}$ – $1\frac{8}{10}$ lin. latum, obovatum vel oblongo-obovatum, obtusum, acute triquetrum, basi styli crassiori decidua.

Tuckerman includes this species at the end of the *Montanæ* of Fries, and Drejer, speaking of his *Spheridiophoræ* (the same group) says, "Terminos suos egreditur in *C. pubescens*, Muhl." It has no immediate affinity with any of this group in the States. *C. triquetra* of California is allied to it, and the *C. alpestris* of Europe. The presence of the lower subradical female spike is interesting as analogous to those of *C. alpestris*, and in two specimens of *C. pubescens* the presence of male florets on the apex of the upper female spike affords another analogy with it.

61. *C. cæspitosa* (L.); "spicis 3–4 confertis, terminali mascula fusiformi solitaria, foemineis subcylindricis sessilibus; bracteis auriculato-aristatis truncatisve; stigmatibus 2; perigyniis ovatis enervibus utrinque gibbis, ore integro, brevissime rostratis sessilibus sparsis deciduis, squamas lanceolatas æquantibus; culmo acutangulo nudo foliisque bicarinatis margine deflexis flaccidis" (Fries).—*C. cæspitosa*, L. Fl. Succ. p. 333, ed. 2. (1755); Fries, Nov. Fl. Suec. Mant. iii. 156 (1842), Sum. Vcg. Scand. p. 227 (1846); Anderson, Cyp. Scand. p. 42. t. 6. f. 59; Reichenbach, Icon. Fl. Ger. t. 229; Lang, Car. Ger. et Scand. p. 70. (non Good., Smith, Hooker, Gay, etc.). *C. pacifica*, Drejer, Hafn. p. 292, Rcv. Crit. Car. Bor. p. 39. *C. Drejeri*, Lang, Fl. Ratisb. p. 548, Koch, Syn. Fl. Ger. (TAB. LXII.)

HAB. In Europa, a Lapponia ad Germaniam, etc.: "per omnem Scandinaviam a Lapponia infima, ubi tamen rarissima, ad Scaniam, frequens. In Suecia media pratorum uliginosorum gramen omnium longe copiosissimum. Floret ineunte Majo, mensem ante *C. vulgaris* immixtam: prima spica florente *C. vulgaris* hæc ubique fructifera." (Fries.)

"*C. cæspitosa*, spicis erectis cylindricis ternis subsessilibus, mascula terminali, culmo triquetro. Distinguitur facile a reliquis foliis angustis, longis, lato viridibus, in majores fasciculos natis quam in ulla alia specie; spicis foemineis duabus, erectis, nigricantibus; capsulis flavescentibus, sessilibus, erectis, obtusis, ovatis, imbricatis; culmo nudo, exacte triquetro, sub infima spica foliolum spica longius, sub altera brevius ipsa

spica.—Hab. in paludibus ubi cæspitum instar turfas et fasciculos gratae virides maximosque constituit. Indicat solum cæspitosum: replet paludes, et ut felicius hoc peragat a bobus relinquenda. Suecis, *Tufstarr.*” (*Lin. Fl. Suec.*)

“ Ita variabilis est *C. vulgaris*, adeo constantissima et monotypica *C. cæspitosa*. Non modo absolute cæspitosa nec stolonifera unquam, sed innovatione centrali in altum crescens tumulos pulvinatos format, maxime præcox, primo lœte viridis, erecta, dein lutescenti-viridis; florens curta, erecta, adulta clongata, flaccida; foliis fascicularum sterilium undique demum decumbentibus pulvinata. *Culmi* graciles, æquales, acute triquetri, angulis sebris, *aphylli*, basi modo 2–3 vaginis truncatis vestiti; foliolis brevissimis terminatis, quo a *C. vulgaris* semper dignoscitur. *Folia* fascicularum sterilium vero longissima, angusta, mollia, lœvia, margine scabrella: adulta supra bicanaliculata, margines vero deflexi nec unquam folia involvuntur, qui nitus in *C. vulgaris* angustifolia semper conspicuus. *Vagineæ* inferiores tendunt quidem ad fibrillosam indolem *C. strictæ*, verum hic character adeo obscurus ut in definitione vix citetur. *Bractæ* non vaginantes, eximie auriculatae, infima vero tantum folio setaceo terminatur: reliquæ *aphyllæ* prorsus, nervo vel excurrente vel ante apicem evanescente. *Spicæ* omnes confertæ, unicolores (nec ut in *C. vulgaris* vulgo variegatae): mascula fusiformis, antheris flavis, defloratis fulvis: foemineæ sessiles, subcylindricæ, ob foliorum defectum nunquam spicam remotam eniti potest. *Squamæ* lanceolatae, carinatae, foemineæ totæ atræ. *Stigmata* longissima. *Fructus* multi abortivi et facile decidui, inordinati, gibbi, hinc non ut in *C. vulgaris*, etc., adpressi, utrinque subacuti, enerves.” (*Fries, Mant. 3.*)

“ Spicis confertis, mascula subsolitaria, foemineis oblongis subsessilibus; bracteis angustissimis *aphyllisque*; fructibus subsessilibus ellipticis obtusis utrinque convexis patentibus cnervibus, squamam æquantibus superantibnsque; culmo acutangulo, inferne vaginis teretibus tenuissime fibrillosis *aphyllo*; fructifero, foliisque supra bicarinatis, flaccidis; radice cæspitosa.

“ *C. strictæ*, Good., proxima, sed tenuior. *Culni* abortivi, quales frequentes, stricti manent: vaginæ duæ superiores modo foliiferi, foliis haud marcescentibus; inferiori abbreviato. *Folia* præcipue fascicularum sterilium, sat lata, siccitate revoluta. *Spicæ* in apice culmi sessiles, congestæ, squama vaginante vulgo tantum bracteatae. Vidi tamen in paludosis formam raram spicis pedunculatis, pendulis, cylindricis. *Fructus* (*C. strictæ*) magis turgidi, indeque haud arcte imbricati, sed condensati, fere squarroso-patentes, ut in *C. acuta*: normaliter persistentes: variant subnervosi, punctulati, pruinosi, et subangulati: sed hi lusus atypici.

“ Var. *retorta*; spicis cylindricis laxis; fructibus oblongo-acutis subcompressis deciduis, squama cespidata brevioribus; culmis elongatis laxissimis ad terram arcuato-deflexis; fasciculis e vaginis *aphyllis* imbricatis ferrugineis basi triquetris.—In nemoribus paludosis. Spicis et fructibus ad *C. strictam*, Good., revergit: hi tamen enerves, et culmi gracillimi, tenues, etiam florentes laxissimi: quo a *C. stricta* recedit.” (*Fries, Summa. Veg. Scand.*)

“ Spicis foemineis 2–3 subsessilibus cylindricis vel subrotundis ad masculam solitariam confertis densifloris; bracteis saepe *aphyllis* auriculatis angustis; fructibus patentibus ovato-ellipticis, rostro minuto, apiculatis utrinque convexis enervibus, squamas obtusiusculas subsuperantibus; culmo scaberrimo acutangulo; vaginis teretibus tenuiter fibrillosis *aphyllis*; foliis flaccidis supra bicarinatis.

“ Primo vere lœtissime florens colore foliorum dilute viridi, spica mascula fulvo-brunnea, tumulisque pulvinatis, quos radix eximie cæspitosa format, jam e longinquo ab omnibus distinguatur gramen hocce. *Culni* graciles, acute triquetri, primo curti et erecti, demum elongati, saepe deflexi (nec apice nu-

tantes), vaginis *aphyllis* tenuissime fibrillosis inferne obtectus, quas supersedunt folia planiuscula duo brevia, quorum sumnum culmi apicem æquat. *Folia* fascicularum sterilium longissima, angusta, mollia, margine scabra, supra bicarinata, marginibus deflexis. *Bractæ* auriculato-cuspidatae truncatae, raro foliaceæ, spicam masculam æquantes. *Spicæ* in apicem culmi congestæ, sessiles, subcylindricæ, forma variabiles, saepe crassæ: fructus facile decidni, gibbi, acuti vel obtusi, virides, pallide flavescentes vel obscuri: squamæ ovales, obtusæ, vel lanceolatae, acutæ, fuscæ.—Est, ut vulgatissima, maxime polymorpha, quum characteribus tum habitu. Forma, colore, directione, numero fere omnes variant partes, nec unâ comprehendendi possunt descriptione. In hac tamen formarum variatione ab affinibus semper facillime recognita, nec cuiquam nisi formis macris *C. strictæ*, Good., ullo modo confundenda. Quibus rationibus haec species cum *C. vulgaris*, usque ad nostra tempora confusa, ab ea remota fuit, quæ contentio fuit de nomine, quo optime salutaretur, quæ denique sunt hujus synonyma, breviter historiam stirpis omnium congenerum primus clare extreavat et exposuit Fries.

“ Var. *retorta*; culmo laxo; spiculis cylindricis subpendulis distantibus; fructibus oblongo-acutis subcompressis, squamis fere brevioribus; vaginis triquetris.—Forma inter *C. strictam*, Good., et *C. cæspitosam* quasi media videtur. *C. strictæ* congruit vaginis triquetris, fructibus glumisque. Culmo autem elongato, laxissimo, ad terram arcuato-deflexo, foliis latioribus, spicisqne *C. cæspitosæ* proprior.” (*Anderson, Cyp. Scand.*)

Linnæus, in his ‘Iter Scaniæ’ (June 19, 1749, p. 207), says: “Here and there were some moist places which bore some grass, generally excavations, where in former days the people had dug turf. In these cavities some patches had begun to grow, as it were to reclose the wound of the earth, and these patches or tufts were exclusively of a single grass called *Tufstarr.*”

I have given the graphic descriptions of Fries and Anderson of this long-mistaken species and its variety, adding the original character of Linnæus, as the works from which they are taken may not be accessible to all. Though the specimens in the Herbarium of Linnæus are those of the true *C. cæspitosa*, their general resemblance to what is now known as *C. vulgaris* misled the admirable Goodenough in his valuable paper on the British Carices, read to the Linnæan Society in 1792. Not that he had not misgivings on the subject, for he says (Lin. Trans. ii. 196) of his *C. cæspitosa* (*C. vulgaris*, Fries), “It was not till after repeated and careful examination of the Linnæan Herbarium that I could determine it; for the specimens there preserved seem chosen ones, and of course do not appear at first sight to bear that exact resemblance to the general habit which is observable with us. I was relieved from all doubt by M. Afzelius, who, from his intimate and accurate knowledge of the Swedish plants, and not less perhaps of those of our country, traced out to me certain marks of similarity.”

From this time to 1841, when the ‘Revisio Critica Caricum Borealium’ of Drejer was published, the true *C. cæspitosa*, L., was generally unrecognized. Under *C. cæspitosa* (*C. vulgaris*, Fries) he expresses a doubt of the correctness of Gay, who had referred the *C. cæspitosa*, L., to the *C. stricta*, Good., and he adds: “Tertia exstat species confinis, *C. pacifica*, mihi, Fl. Hafn., quæ spicam masculam solitariam cum cæspitibus densis foliisque viridibus non glaucis conjungit. Teste Vahlio, Læstadius hanc quoque, quam sub nomine varietatis *C. cæspitosa* habet, veram Linnæanam *cæspitosa* dicit.”

This observation falling under the notice of Fries, led him to the perception of the true *C. cæspitosa* of Linnæus. But he errs in attributing the original reference of *C. vulgaris* to the *C. cæspitosa* of the Linnæan Herbarium to Smith; and in considering the *C. cæspitosa* of Goodenough to be compounded of the true *C. cæspitosa* and *C. vulgaris* (Mant. iii. p. 158); at least, I can detect no such evidence from the description of Goodenough, and I am not aware that any one, except Dr. Greville, on the authority of Fries (p. 155), has found the *C. cæspitosa*, L., in this country. I have in vain sought for it in all our Herbaria.

I can add nothing to the descriptions of this species, which Fries and Anderson ally to the *C. stricta*, Good., from its reticulated sheaths and deciduous perigynia. But the aspect is more that of *C. vulgaris*, from which the above characters, its cæspitose fibrous (not creeping) root, the larger auricles, short bracts, bi-convex nerveless perigynium, the solitary male spike, and the absence of male florets on the female ones, distinguish it. The scales have frequently a narrow white margin, and the form of the perigynium is often subrotund, or oval, or obovate. The specimens figured were sent to me by Fries, from Upsala. He at the same time mentioned that he has received it from Dr. Greville of Edinburgh, but no specimen exists in Dr. G.'s herbarium, and he has no recollection of ever finding it in Scotland. I have in vain sought for it in the herbaria to which I have had access; but I cannot doubt that a species so common in the North of Europe will eventually be found in Scotland.

62. *C. oligosperma* (Michaux); spicis 2–3 erectis densifloris, terminali mascula tenui cylindrica pedunculata nuda vel altera minori contigua bracteata sessili, fœmineis 1–2 ovatis crassis paucifloris sessilibus evaginatis flavidis, suprema subinde apice mascula, infima remota saepe breve pedunculata; bracteis involutis, infima saepe culmo multum longiori; stigmatibus 3; perigyniis turgide ovatis inflatis breve rostratis, ore emarginato obliquo bidentato, nervosis glabris, squama late ovata obtusa mutica vel obtusa mucronulata ferruginea medio pallida nervata margine albo-hyalina longioribus.—*C. oligosperma*, *Mich.* ii. 174; *Dewey, Sill.* xi. 160; *Kunth, Cyp.* 499; *Tor. Mon.* 421; *Carey, l. c.* 535; *Sartwell, Eas.* n. 156. *C. Oakesiana*, *Dewey, l. c.* xiv. 391 (1848); *Kunth, Cyp.* 499. (TAB. LXIII.)

HAB. In America septentrionali. Canada, *Michaux*. Cumberland House to Bear Lake, *Richardson*. White Mountains, New Hampshire, *Oakes, Tuckerman*. Lake Avalanche, New York, *Gray*. Michigan, *Torrey*. Oneida Lake, *Knieskern*.

Culmus 1–2-ped., gracilis, triqueter, laevis vel apiee scabriusculus, basi vaginis foliorum rubris vel decoloribus teetus, foliisque vaginantibus inferne vestitus, superne nudus; pars spicas gressens 1–4 poll. longa. *Folia* involuta, angusta, culmo saepe longiora, demum flaida. *Bracteæ* evaginatæ, involutæ: infima eulmum subæquans vel eo multum longior. *Ligula* rotundata, ferruginea. *Spica mascula* 1–1½ poll. longa, ¾ lin. lata, ferruginea: altera minor sessilis, bracteata. *Spicæ fœmineæ* 1–2, a se 8 lin. ad 2 poll. remotæ, 4–9 lin. longæ, 3–4 lin. latæ, plerumque sessiles, vel infima breve pedunculata. *Squamæ* ferrugineæ, margine albo-hyalinae: masculæ arete imbricate, lanceolatae: nervo in inferioribus infra apicem evanescente, in superioribus saepe extra producto: fœmineæ latiores, obtusæ vel acutæ vel mueronulatae. *Perigynium* 2–3 lin. longum, 1–1½ lin. latum, abrupte vel sensim rostellatum (rostro ½–1 lin. longo); stylo demum porreto. *Achenium* 1–1½ lin. longum, ½ lin. latum, ovali- vel obovato-triquetrum, basi styli apieulatum, fuseum.

This species, originally found by Michaux in Canada, and subsequently by Sir John Richardson, on his first journey with the late Sir John Franklin to the Polar Sea, was not known, I believe, as a native of the United States till discovered by Mr. Oakes at the base of the White Mountains of New Hampshire. His specimens were described by Dewey in 1848, under the name of *C. Oakesiana*, the orifice of the perigynium said to be entire. I have abundant specimens from Mr. Oakes's locality, gathered by Tuckerman, which entirely agree with those from British America. I am not aware whether this species has been found south of New York.

Sir John Richardson, in his last Polar Expedition, brought very

characteristic specimens of this plant from Lake Superior, and with them, from the Methye Portage, an allied, but, I think, distinct species, which I have named after his friend and companion, Dr. Rae.

In 72 specimens of *C. oligosperma*, I find—

20	with 2 spikes.	56	with 1 male.	35	with 1 female.
51	"	3	"	16	" 2
		1	"	4	" 2

In 17 the upper female is male at top.

63. *C. Raeana* (Boott); spicis 3–4 erectis cylindricis, terminali mascula pedunculata nuda basi attenuata rarius altera minori sessili subremota bracteata, fœmineis saepius 2 multifloris remotis olivaceo-purpureis sessilibus vel infima basi laxiflora subinde vaginata breve exserte pedunculata; bracteis culmum subæquantibus; stigmatibus 3; perigyniis oblongo-ovatis rostratis bifurcatis (lacinii acutis scabris saepe basi lobatis) inflatis nitidis nervatis fusco-olivaceis, squama lanceolata acuminata acuta vel cuspidata purpurea medio viridi margine albo-hyalina latioribus paulo longioribus.—*C. Raeana*, *Boott, Rich. Arct. Exp.* ii. 344 (1851). (TAB. LXIV.)

HAB. In America Boreali. Methye Portage, *Sir John Richardson*, 1848–9.

Culmus 1–1½-pedalis, gracilis, triqueter, laevis vel seabriusculus, basi vaginis pallidis reticulatis teetus; pars spicas gerens 5–8 poll. longa. *Folia* angusta, involuta, eulum aequantia, saepe curvata. *Bracteæ* basi amplectentes: infima interdum breve vaginata, culmum subæquans. *Vagina* 1–2 lin. longa. *Spica mascula* 1–1½ poll. longa, 1 lin. lata, laxa, basi attenuata, laxiflora, rarius altera minor braeteata, subpollicem remota. *Spicæ fœminæ* cylindricæ, 6–16 lin. longæ, 2½–3 lin. latæ, a se 2½–3 poll. remotæ, sessiles, vel infima saepe laxiflora, pedunculata, interdum breve vaginata. *Squamæ* masculæ lanceolatae, pallide ferrugineaæ, margine late albo-hyalinae, laxæ, superiores mucronatae: fœmineæ lanceolatae, acuminatae, acutissimæ, inferiores saepe apiee involutæ, ciliatae, superiores hispido-mucronatae. *Perigynium* (immaturum) 2½ lin. longum, lineam latum, bifurcatum; laeiniæ acutæ scabrae saepe basi lobatae.

C. oligospermæ affinis. Differt inflorescentia longiori; spicis 3 vel 4, rarius 2, fœminæ cylindricæ, multifloris, plerumque 2, omnino fœmineis, infima laxiflora, interdum exserte pedunculata; perigyniis longius rostratis, bifurcatis, laeiniis scabris, saepc lobatis; squamis fœmineis angustioribus acuminatis.

I find in 18 specimens—

1	with 2 spikcs.	16	with 1 male.	1	with 1 female.
13	"	3	"	2	" 15
		4	"	4	" 2

In 13 there is a sterile bract below the male spike.

64. *C. crus-corvi* (Shuttleworth); spica elongata, ambitu lanceolato, basi ramosa pallide viridi demum olivacea, e spiculis androgynis apice masculis parvis ovatis demum squarrosis arcte congestis sessilibus numerosis decomposita, ramis oblongis erectis contiguis omnino spiculiferis, inferioribus saepe longe setaceo-bracteatis; stigmatibus 2; perigyniis e basi truncata demum insigneriter tumida spongiosa, ovatis sensim in rostrum longum lineare attenuatis bifidis antice alte fissis, marginibus superne acutis serratis, plano-convexis leviter nervatis stipitatis divaricatis, squama ovata acuta vel plus minus cuspidata pallida hyalina trinervi plus duplo longioribus.—*C. crus-corvi*, *Shuttleworth in litt.*; *Kunze, Riedgr.* pp.

128–166, t. 32, 42; *Carey*, l. e. 512; *Sartwell*, *Exs. n.* 17. *C. sicæformis*, *Boott*, *Bost. Journ. Nat. Hist.* v. 113 (1845). *C. Halei*, *Dewey*, *Sill. ii. (ser. 2.)* 248. *C. ornithorhyncha*, *Pl. Eas. Fendler* (*see. Kunze*). *C. hystrix*, *Gray in litt. (see. Kunze)*. (TAB. LXV.)

HAB. In America septentrionali. New Orleans, *Drummond*, 432. Texas, *Lindheimer*. Florida, *Chapman*. St. Louis, *Engelmann*. Ohio, *Riddell*. Illinois, *Mead*.

Culmus 2–3-pedalis, validus, acutangulus, scaber, basi foliosus. *Folia* 3–6 lin. lata, culmo longiora, plana, apice attenuata. *Bractæ* setaceæ: infima vel inferiores quandoque spica longiores, saepe obsoletæ: basi bilobatæ. *Spica* 2½–5 vel 7–12 poll. longa, ½–1½ poll. lata: rami saepe 1½–2½ poll. longi, vel abbreviati. *Spiculæ* demum squarrosæ. *Perigynium* 3–3½ lin. longum, inferne lineam latum, demum basi insigniter circumscriptione tumidum, spongiosum. *Achenium* lineam longum, ¼ lin. latum, ovatum, basi productum, basi styli crassiori apiculatum.

I am not aware that Mr. Shuttleworth has published this species. Kunze says merely "Shuttleworth in litteris." I described it in October, 1842, for a Paper communicated to the Boston Journal of Natural History in that year, which was not published till January, 1845. It varies in the size of the spike, but I can see nothing from an extensive suite of specimens to justify making even a variety out of them. The occasional existence of exclusively male spiculæ is accidental, and the greater or less elongation of the setaceous bracts and branches of the spike and the depth of the anterior fissure of the perigynium afford no constant characters. Kunze, in his description of Drummond's specimens, which are not fully mature, speaks of the perigynia as "basi membranaceo-dilatata," and so figures them; and in his subsequent description as "dilatato-truncata," his figure representing the remarkably prominent spongy rim of the base. This, I think, is the natural growth of the fully mature perigynium, the spongy substance being deposited between the anterior and posterior membranes as the fruit ripens, as occurs in *C. sterilis* and *C. exilis*, and occasionally throughout the perigynium in some species, making the mature form essentially different from the immature. I have a specimen from Dr. Torrey, from "the overflowed swamps of the Mississippi," where the species appears to attain its maximum development. Dewey had received it from Kentucky. Its northern limit appears to be Ohio and Illinois, extending south to Texas and Florida. Schweinitz, in his Analytical Table, has a *C. Nuttallii* from Arkansas, the spikes of which he describes as "corymbosely ramosæ," and as "near *C. Indica*." I am not aware of any species in the States of the habit of *C. Indica*. Does he refer to the present species?

65. *C. festiva* (Dewey); spica ovata vel subrotunda fusco-ferruginea nuda vel bracteata, e spiculis 6–12 androgynis basi masculis subrotundis simplicibus in capitulum arcte congestis composita; stigmatibus 2; perigyniis ovato-ellipticis attenuato-rostratis, ore albo-hyalino oblique antice secto demum bidentato, utrinque leviter nervatis, marginibus c basi acutis alatis, sursum e medio serrulatis, ferrugineis, squama lanceolata obtusiuscula ferruginea margine albo-hyalina paulo longioribus vel eam subæquantibus.—*C. festiva*, *Dewey*, *Sill. xxix.* 246; *Drejer*, *Rev. Crit.* 23; *Fries*, *Nov. Fl. Suec. Mant.* iii. 136; *eiusd. Sum. Veg. Scand.* 223; *Anderson*, *Cyp. Seand.* 63. t. 4. f. 27; *Lang*, *Car. Ger. et Seand.* 52; *Hooker*, *Fl. Bor. Am.* ii. 215; *eiusd. Fl. Antaret.* ii. 363. *C. incisidentata*, *Lechler*, *Pl. Magellanicae*, (*Herb. Paris.*) (TAB. LXVI.)

HAB. In America septentrionali et meridionali, in Europa et Asia boreali. In Grœnlandia, *Hornemann*. Una-

laschka, *Chamisso*. Cumberland House and Bear Lake, *Richardson*. Rocky Mountains, *Drummond*. Columbia River, *Scouler*. Oregon, *Nuttall*. New Mexico, *Fendler*, n. 882. Cordilleras, near Coquimbo, *Gay*. Straits of Magalhaens, *Anderson*, *Lechler*. Alps of Lapland and Finmark, *Fries*. Alps of Norway, *Anderson*.

Cæspitosa. *Culmus* 6–15-poll., validus, basi foliis vaginatis rudimentisque foliorum castaneis tectus: superne nudus, acute triquierter, scaber. *Folia* 2 lin. lata, culmo longiora vel breviora. *Spica* 6–9 lin. longa, 6–8 lin. lata, nuda vel bractea saepe subfoliacea spicam subæquante suffulta. *Spiculæ* 6–12, subrotundæ, 3–4 lin. longæ, 2–3 lin. latae. *Squamæ* conformes, apice marginibusque albo-hyalinæ. *Perigynium* 2 lin. longum, 1 lin. latum, ferrugineum; rostro attenuato, fusco; ore albo-hyalino, antice fisso, bidentato: marginibus basi acutis, sursum alatis, serrulatis: utrinque leviter nervatum. *Achenium* ¾ lin. longum, ½ lin. latum, oblongo-ovatum, basi styli æquali abrupte apiculatum, ferrugineum.

This species, so widely diffused from Greenland and Arctic America, along the Rocky Mountains, and from Unalashka and the Oregon to the Cordilleras and the Straits of Magalhaens, has never been found in the limits of the United States, but within a few years has been met with in the north of Europe. I am indebted to M. Spach for a sight of Lechler's *C. incisidentata* from Sandy Point.

66. *C. Purdiei* (Boott); spica oblonga fusco-ferruginea, e spiculis 8–12 androgynis basi masculis contiguis simplicibus inferioribus bracteatis composita; stigmatibus 2; perigyniis e basi ovata lanceolata plus minus attenuato-rostratis, ore integro oblique secto, nervatis inalatis apice ad margines interrupte tuberculato-dentatis ferrugineis demum fuscis, squama ovata acuta vel obtusa ferruginea nervo pallido longioribus. (TAB. LXVII.)

HAB. In America Meridionali. Bogs near the snow: Nevada de St. Martha, Columbia; Paramo de Cuchero, *W. Purdie* (*Herb. Hooker*).

Radix repens; fibris validis, lignosis. *Culmus* 1½-ped., triquierter, scaber. *Folia* 1½–2 lin. lata, culmo breviora. *Bractæ* c basi squamæformi setaceæ, spiculis suis longiores, vel infima angusta spicam subæquans. *Spica* 12–14 lin. longa, 6 lin. lata. *Spiculæ* 5 lin. longæ, 3 lin. latae: superiores congestæ: inferiores discretæ: infima interdum subcremata. *Squamæ* conformes, ferrugineæ, nervo pallido. *Perigynium* 1⅞–2⅓ lin. longum, ½ lin. latum, inalatum, versus apicem marginibus interrupte quasi tuberculis apiculatis dentatis. *Achenium* ¾ lin. longum, ¼ lin. latum, oblongo-ovatum, basi productum, biconvexum, basi styli conica apiculatum.

A *C. festiva* differt, spica oblonga, laxior; perigyniis inalatis, nec attenuato-rostratis, apice tuberculato-dentatis; achenio oblongo-ovato; radice repente.

The peculiar roughness of the apex of the perigynium is not correctly drawn in the figure. It is not a continued series of fine serratures, as in *C. festiva*, but a more or less interrupted group of little, coloured, ovate tubercles, with short, setaceous apices, and the margins of the perigynium, as shown in the magnified apex of the perigynium at d, have too much the appearance of their being winged. The form of the perigynium, with its truncate orifice, the absence of winged margins, and the tuberculated roughness at their apex, with the oblong, loose spike, form evident characters to distinguish this species from *C. festiva*.

67. *C. alopecoidea* (Tuckerman); spica ovata vel oblonga demum castanea, e spiculis 8–12 androgynis apice masculis ovatis coarctato-congestis simplicibus setaceo-bracteatis, vel infima rarius composita remota subfoliacea-

bracteata; stigmatibus 2; perigyniis ovatis acuminato-rostratis oblique sectis bifidis enerviis vel antice medio vel basi leviter 3-5-nervatis, nervis saepius sursum evanidis, superne marginibus acutis serratis, plano-convexis basi spongiosis erecto-patulis flavidis castaneo-tinctis, squama ovata acuta hispido-cuspidata longioribus vel (cuspidem) subaequantibus.—*C. alopecoidea*, *Tuck. En. Method.* p. 18; *Carey*, l. e. 512; *Sartwell*, *Eas. n.* 19. *C. cephalophora*, var. maxima, *Dewey*, l. c. xliii. 92. (TAB. LXVIII.)

Var. spica angustiori, spiculis inferioribus discretis.—*Sartwell*, *Eas. n.* 74.

HAB. In America septentrionali. New York, *Sartwell*. Canada, *Maelagan*. Var., Michigan, *Cooley*.

Culmus sub-2-ped., latus, angulis acutissimis sebris; basi foliatus, reliquis foliorum fibratis nigrescentibus teetus. *Folia* 1½-3 lin. lata, culmo saepe longiora, pallide viridia. *Bracteæ* setaceæ vel infima subfoliacea, spica saepe longior. *Spica* 9 lin. ad 2 poll. longa, 4-7 lin. lata. *Spiculae* 3-4 lin. longæ, 2-4 lin. latæ, omnes congestæ, sessiles vel inferiores discretæ: infima quandoque subremota, eomposita. *Squamæ* masculæ angustiores, lanceolatae, acuminatae, cuspidatae, superne marginibus sebrae. *Perigynium* 1 ¼-1 ¾ lin. longum, 7-8 lin. latum, superne subalatum, quandoque enerve. *Achenium* 8 lin. longum, 6 lin. latum, suborbiculatum, basi productum, lentieulare, eastaneum, basi styli æquali abrupte apieulatum.

A *C. muricata*, L., differt, spica congesta; spiculis pluribus, braeteatis, inferioribus plurifloris; perigyniis brevius rostratis, erecto-patulis; stylo basi æquali; squamis longius cuspidatis; culmo latiori, angulis acutissimis.

Carey refers an associated species found in Ohio, Kentucky, and Illinois, to the *C. vulpina*, Lin. It differs from the European plant in a simpler spike and a broader and more acutely angled culm, like that of *C. stipata*, of which I think it might be considered a variety with a brevi-rostrate perigynium. It differs from *C. alopecoidea* in its broader culm and nerved perigynia.

68. *C. macrocephala* (Willdenow); spica magna ovali ferruginea demum fusca, e spiculis pluribus masculis api-que masculis in capitulum amplum densum arcte congestis composita; stigmatibus 3; perigyniis maximis late ovatis sensim in rostrum longum attenuatis bicuspidiatis antice altius sectis plano-convexis basi crasse spongiosis utrinque nervosis lucidis demum fuscis, marginibus inferne alatis irregulariter cartilagineo-dentato-laciniatis saepe reflexis, squama ovato-lanceolata acuminata cuspidata nervosa ferruginea latioribus longioribusque.—*C. macrocephala*, *Willd. Herb.*; *Spr. Syst.* iii. 808; *Kunth*, *Cyp.* 428; *Hooker*, *Fl. Bor. Am.* ii. 215. t. 216; *Gray*, *Japan Exp.*, 328. *C. Menziesiana*, *Smith*, *Herb.* (TAB. LXIX.)

HAB. In Asia et America Boreali. Kamtschatka, *Bongard*, *H. Bootl* (spec. e Fischero missum). Northwest coast, North America, *Menzies*, *Douglas*. In Japan, *Dr. Morrow* (*Herb. Gray*).

Culmus 9-12-poll., validus, rigidus, triquierter, seaber, basi foliosus, reliquisque foliorum fibratis fuseis teetus. *Folia* 2-3 lin. lata, culmo longiora, rigida, carinata, serrato-sebra. *Bracteæ* filiformes, inferiores spieis suis longiores. *Spica* 1 ½-2 poll. longa, 12-14 lin. lata. *Spiculae* omnino et apiee masculæ, arcte congestæ. *Squamæ* conformati, masculæ angustiores. *Perigynium* 7-7 ½ lin. longum, 3 lin. latum, nervosum, nervis fuseis vix prominentibus. *Achenium* 2 lin. longum,

1 ½ lin. latum, oblongum, obtusum, inæqualiter obtuse triquetrum, basi productum, fuseum, basi styli inerassata apieulatum: uno angulo indentato.

This fine species has been described as having the spiculæ male at base; but in the specimen found by Mr. Douglas they are occasionally entirely male, or male at top. In that specimen the perigynia are comparatively few to those on the specimen from Kamtschatka, sent to me by M. Fischer of St. Petersburg. Dewey alludes to a specimen found by Mr. Nuttall on the Rocky Mountains (Sill. Journ. xlii. 91), but he describes it as dioicous, with two stigmas, and I have not therefore ventured to quote him, especially as he says the perigynia are "margine serrulatis." I have no idea to what species his *C. macrocephala* is referable. His *C. Nuttallii* (Sill. xlii. 92) is *C. Douglassii*, B. Dr. Gray includes this species among the plants found by Dr. Morrow in Japan.

69. *C. Deweyana* (Schweinitz); spica oblonga pallida albo-viridi demum lutescenti, e spiculis 3-6 parvis ovalibus laxis sessilibus plerumque androgynis basi masculis, superioribus contiguis, infima vcl binis inferioribus remotis bracteatis; stigmatibus 2; perigyniis lanceolatis acuminato-rostratis bifidis plano-convexis margine acutis serratis obsolete vcl leviter nervatis tenuissimis basi spongiosis, squama ovata vel lanceolata acuta plus minus mucronata albo-hyalina nervo pallide viridi longioribus.—*C. Deweyana*, *Schw. An. tab. An. Lye. N. Y.* i. 62; *Schw. et Tor. Mon.* 310; *Tor. N. Am. Cyp.* 392; *Dewey*, *Sill. Journ.* ix. 62; *Kunth*, *Cyp.* 419; *Carey*, *Gray Bot.* 514; *Sartwell*, *Car. Easie.* n. 34. *C. remota*, *Rieh. Ap. Frank. Journ.* (ed. 2.) 35. (TAB. LXX.)

HAB. In America Boreali. Carlton House, *Richardson*. Rocky Mountains, *Drummond*. Oregon, *Nuttall*, *Wilkes*. Napa valley, California, *Thurber*, n. 11.

Culmus ½-4-ped., gracilis, debilis, saepe decumbens, angulis acutis, sebris, basi foliosus; pars spicas gerens ½-2 ½ poll. longa. *Folia* 1-1 ½ lin. lata, culmo breviora, plana, mollia. *Bracteæ* infima plerumque setacea, plus minus longa, rarius culnum æquans, vel eo longior, reliquæ breviores, demum squamæformes. *Spiculae* 3-5 lin. longæ, 2-8 lin. latæ, laxæ, 3-5, rarius 6: suprema plerumque major: infima interdum 1 ½ poll. remota: omnes basi paree maseulæ, vel rarius quædam omnino masculæ, vel basi apieque maseulæ: vel fœmineæ. *Squamæ* albo-hyalinæ, plus minus mueronatae. *Perigynium* 2 ¼-3 lin. longum, 6-7 lin. latum, tenuissimum, basi spongioso inerassatum, obsolete nervatum, vel basi leviter nervatum, nervis plus minus superne evanidis. *Achenium* 1-1 ½ lin. longum, 6 lin. latum, oblongo-ovatum, basi productum, eastaneum, lueidum, punctulatum, compresso-bieonvexum, basi styli elevato-deeidua.

The specimens, not fully mature, from Oregon and California have six longer, more approximate spiculæ, shorter bracts, and a less acutely angled culm.

Drejer (Symb. p. 26), describing several species which he refers to his *Hymenochlænæ*, including the *Sylvaticæ* of Tuckerman, after his observations on *C. Cherokeensis*, says: "Alia est species Americana, quæ licet diversa videatur, neque affinitatem quisquam adhuc opinatus est, huic (*C. Cherokeensi*) intimo affinitatis vinculo connectitur. Dico *C. Deweyanam*, Schw., vulgo *Vigneis* adnumeratam."

The oval androgynous sessile spiculæ, evaginate bracts, plano-convex perigynium, lenticular achenium, and two stigmata, certainly widely separate *C. Deweyana* from the *Sylvaticæ*, and there remains only the thin membranous texture of the perigynium, the loose spiculæ, the white hyaline often mucronate scales, and the soft grassy leaves, to give plausibility to the idea of any affinity.

Tuckerman places it in the subsection "Dewyanæ" of his *Leptantheræ*, "Vigneas inter et Carices," associating *C. bromoides* and

C. trisperma with it, considering the *Leptantheræ* as "greges evolutione Vigneis nobiliores." It is to be regretted that one who had so closely studied the genus, should have omitted the characters of his sections and groups; and his having done so only proves to me how the best observers, in the present state of our knowledge, content themselves with shadowy perceptions of truth, which they feel would elude them in the grasp. If however we are, on a more enlarged acquaintance with the genus, to trace the higher groups from the *Psyllophoræ*, as the admirable Drejer supposes, future observers may be enabled to connect, by intermediate forms, *C. Deweyana* with the *Sylvaticæ*; but at present I know of no better arrangement than that of Tuckerman with respect to its affinities.

70. *C. Parryana* (Dewey); spicis 3–4 oblongo-cylindricis gracilibus erectis contiguis purpureo-albidis, terminali mascula vel basi mascula, reliquis foemineis, infima exserta pedunculata, breve bracteata; stigmatibus 3; stylo exerto; perigyniis late ovalibus vel obovatis compresso-subtriquetris rostellatis, oris emarginato marginibusque superne ciliato-serratis, granulatis albidis purpureo-tinctis stipitatis, nervis 2 marginalibus, squamam late ovatam obtusam vel acutam mucronulatam purpuream, nervo pallido, margine late albo-hyalinam subæquantibus.—*C. Parryana et C. arctica*, *Dewey*, *Sill.* xxvii. 239 (1835); *Tor. Mon. N. Am. Cyp.* 426; *Boott, Hooker, Fl. Bor. Am.* ii. 216 (*exel. syn.!* et hab. *eit. a Bongard*). (TAB. LXXI.)

HAB. Carlton House, Am. arct., *Richardson* (1827).

Culmus subsesquipedalis, strictus, firmus, triquetus, granulatus, inter spicas scaber, basi foliatus; pars spicas gerens 1 $\frac{1}{4}$ –2 $\frac{1}{2}$ poll. longa. *Folia* ½–1 lin. lata, culmo breviora, stricta, erecta, firma, linearia, carinata, apice setaceo-attenuata, scabra, marginibus revoluta. *Bractæ* 1–2, angustæ, scaberrimæ: infima rarius spicam æquans, basi vagina 1–2 lin. longa prædicta: secunda spiculâ brevior amplectens. *Pedunculus* infimus 3–6 lin. longus, basi ocreatus. *Spicæ* 4–11 lin. longæ, 1 $\frac{1}{2}$ lin. latæ: extremai longiores: terminalis mascula vel basi vel apice et basi vel basi et versus apicem mascula: reliqua omnino foeminae, summa interdum abbreviata, infimaque basi attenuato-laxiflora; in uno specimine remota, longe pedunculata. *Perigynium* 1–1 $\frac{2}{5}$ lin. longum, $\frac{7}{10}$ lin. latum. *Achenium* $\frac{9}{10}$ lin. longum, $\frac{4}{10}$ lin. latum, oblongo-obovatum, basi styli apiculatum, inæqualiter triquetrum, pallidum.

C. arctica, *Dewey*, is merely in a younger state, with shorter culms and darker scales. Though founded mainly on the terminal spike being "basi mascula," I find on reference to specimens that, of eight, six have the terminal spike male, while in *C. Parryana*, *Dewey*, out of nine specimens, only one has a male spike.

C. arctica, D.:—

5 spicis 3.	6 spica terminali mascula.
3 spicis 4.	2 spica term. basi et versus apicem mascula.
—	—
8	8

C. Parryana, D.:—

4 spicis 3.	1 spica terminali mascula.
5 spicis 4.	6 spica terminali basi mascula.
	2 spica terminali basi et apicem mascula.
—	—
9	9

Torrey (*Mon. Cyp.* 426) remarks that *Dewey* (*Sill.* xxix. 252) in referring *C. Carltonia*, *Dewey*, to *C. stylosa*, Meyer, meant to refer it to *C. Parryana*. I was induced, in *Hook. Fl. Bor. Am.*, to suspect *C. Parryana* and *C. stylosa* were probably the same, judging from the description and figure of *C. stylosa* as given by Meyer, of which I had not at that time seen a specimen.

Tuckerman places *C. Parryana* in his *Acutæ*, between *C. hyperborea*, *Dewey*, and *C. vulgaris*, *Fries*; Drejer, I think more correctly, includes it in his *Melananthæ*, with *C. nigritella*, *Drejer*, and

C. stylosa. The difference, however, with reference to the immediate affinity of *C. Parryana*, is more apparent than real, though Tuckerman allies with it several species which I think, with Drejer, belong to separate and very distinct groups. The three stigmas, triquetrous achenium, the roughness of the orifice of the perigynium, and the vaginate bracts separate *C. Parryana* from *C. acuta* and its allies.

C. Carltonia, *Dewey*, is *C. heleonastes*, Lin. Suppl.

71. *C. monile* (Tuckerman); spicis 4–5 rarius 3–6 cylindricis elongatis, masculis 3 rarius 2–4, infima bracteata, extremis longioribus, omnibus vel inferioribus interdum apice extremo foemineis, foemineis 2 rarius 1 remotis teretibus, vel infima basi attenuato-laxiflora plus minus longe pedunculata nutante nunc brevi-vaginata; bracteis culmo longioribus; stigmatibus 3; perigyniis subgloboso-ovatis breve rostratis glabris bifurcatis, ore saepe obliquo, inflatis 8–10-nerviis lucidis pallidis saepe purpureo-tinctis vel demum flavidis, squama lanceolata acuminata acuta ferruginea medio pallida trincervi margine albo-hyalina latioribus longioribusque.—*C. monile*, *Tuck. En. Method.* p. 20 (*ex parte*); *Boott, Journ. Bot.* v. 69; *Carey, l. e.* 534; *Dewey*, *xlix.* p. 47; *C. bullata?* *B.*, *Tor. Mon.* 422. (TAB. LXXII.)

HAB. In America septentrionali. Cumberland House to Bear Lake, *Richardson*. Rhode Island, *Olney*. New England, *Tuckerman*. Ohio, *Sullivan*.

Culmus 1–2 $\frac{1}{2}$ -ped., gracilis, triquetus, acutangulus, scaber; pars spicas gerens 4–12 poll. longa. *Folia* 1–2 lin. lata, culmo breviora. *Bractæ* culmo longiores: infima interdum breve vaginata. *Vagina* 2–4 lin. longa. *Pedunculi* 4 lin. vel infimus nunc 1 $\frac{1}{2}$ poll. longi, glabri. *Spicæ masculæ* saepius 3, alternae, interdum remotæ, 1–2 $\frac{1}{2}$ poll. longæ, 1–1 $\frac{1}{2}$ lin. latæ. *Spicæ foeminae* saepius 2, 1 $\frac{1}{4}$ –2 $\frac{1}{2}$ poll. longæ, 3 lin. latæ, a se 1 $\frac{1}{2}$ –5 poll. remotæ. *Squamæ* omnes conformes, lanceolatae, acuminate, acutæ. *Perigynium* 2 $\frac{2}{5}$ – $\frac{5}{10}$ lin. longum, 1–1 $\frac{1}{2}$ lin. latum, breve rostratum. *Achenium* 1–1 $\frac{2}{5}$ lin. longum, $\frac{7}{10}$ lin. latum, triquetro-obovatum, castaneum, basi styli apiculatum.

A *C. ampullacea* differt, culmo acutangulo, scabro; spicis foeminae, paucioribus, gracilioribus. A *C. vesicaria*, perigyniis subglobosis, breve cylindrico-rostratis; spicis gracilioribus.

Tuckerman remarks of this species that it approaches *C. vesicaria* and his *C. bullata* (*C. Tuckermani*, B.) appearing to be intermediate between them. I find, in his herbarium, specimens associated with *C. monile*, from Penn-Yan (the *C. monile*, n. 152 of Sartwell's Collection), which do not agree with the original description of *C. monile*, or with the Ohio specimens, from which that description was made. They approach in aspect *C. vesicaria*, but differ from it and from *C. monile* in having a long cylindric serrated rostrum, an oblong-ovate perigynium, with elongated, sharp, rough laciniæ. *C. monile* would seem to be a northern plant, for all the specimens I have seen from Arctic America and New England have perfect achenia, while in those from Ohio it is often abortive.

In twenty-nine specimens I find—

2 with 3 spikes.	3 with 2 male.	4 with 1 female.
13 "	4	24 "
13 "	5	2 "
1 "	6	25 "

One or more of the lower male spikes—or, in one specimen, all three of them—are female at the apex.

72. *C. virescens* (Muhlenberg); spicis 2–5 cylindricis gracilibus vel oblongis approximatis erectis viridibus, terminali pedunculata basi mascula, reliquis foemineis evaginatis alternis, vel superioribus congestis sessilibus densifloris, infima remota bracts exserte pedun-

culata), basi laxiflora; bracteis angustis culmo longioribus; stigmatibus 3; perigyniis ovalibus triquetris utrinque subacutis, vel obovatis erostratis, ore integro, nervosis strigoso-hirtis viridibus, squama ovata acuta vel obtusa acuminata vel cuspidata alba nervo viridi latoribus longioribus vel subaequantibus; foliis vaginisque hirsutis.—*C. virescens*, *Muhl.* 233; *Willd.* iv. 251; *Schk.* f. 147, m. m. m.; *Kunth*, 429; *Dewey*, *Sill.* ix. 259; *Sch. et Tor.* 321; *Tor. Mon.* 408; *Carey*, l. c. 523; *Sartwell*, *Exs. n.* 88; *Darlington*, 349. *C. costata*, *Schw. An. tab.* (TAB. LXXIII.)

HAB. In America septentrionali et meridionali. New England to Virginia. Venezuela, *Fendler* n. 1604 (*Herb. Gray*).

Cæspitosa. *Culmus* $\frac{1}{2}$ -3-ped., triqueter, graeilis, saepè filiformis, rigidus, basi rudimentis foliorum vaginisque reticulatofissis pubescentibus purpureis tectus; sursum foliis longe vaginantibus vestitus; pars spicas gerens 2-5 poll. longa. *Folia* 1- $2\frac{1}{2}$ lin. lata: superiora culmo saepè longiora, vaginae hirsuta. *Bractæ* angustæ, saepè setaceæ, eulmo longiores, evaginatae, vel infima vaginata, plus minus remota, saepè sterilis. *Vagina* $\frac{1}{2}$ -2 poll. longa. *Spicæ* variant: vel 2-4 linearcs, cylindricæ, 1- $1\frac{1}{2}$ poll. longæ, 1- $1\frac{1}{2}$ lin. latæ, alternæ; inferiores pedunculatae, basi laxifloræ; infima interdum $1\frac{1}{2}$ -3 poll. remota: vel oblongæ, saepè abbreviatæ, 2-5, densifloræ, 3-8 lin. longæ, 1-2 lin. latæ, alternæ, vel superiores sessiles, congestæ; infima subremota; terminalis pedunculata, basi subdimidiatim vel plus vel minus mascula. *Squamæ* albæ, nervo viridi: masculæ lanceolatae, acutæ: foemineæ ovatae, acutæ vel obtusæ, acuminatae vel cuspidatae. *Perigynium* $1\frac{1}{10}$ - $2\frac{1}{10}$ lin. longum, $\frac{6}{10}$ - $\frac{7}{10}$ lin. latum, triquetro-ovale, utrinque subacutum, vel obovatum: vel latius, plano-triquetrum, utrinque obtusum, ore integro vel emarginato, undique strigoso-hirtum, viride, nervatum. *Achenium* $\frac{9}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, ovale, triquetrum, fuscum, punctulatum, breve stipitatum, basi styli decidua.

Tuckerman places this species in the group *Virescentes*, Kunth, between the *Montanæ* and *Laxifloræ*, associating *C. hirsuta* and *C. Shortii* with it.

73. *C. trisperma* (Dewey); spica pallida, e spiculis 2-3 remotis parvis paucifloris ovalibus androgynis basi masculis, inferioribus bracteatis; stigmatibus 2; perigyniis elongato-ovatis rostellatis, ore membranaceo integro oblique fisso, plano-convexis glabris utrinque crebre striato-nervosis, squama ovata acuta albo-hyalina nervo viridi longioribus.—*C. trisperma*, *Dewey*, *Sill. Journ.* ix. 63; *Schw. et Tor. Mon.* 311; *Carey, Gray, Bot.* 514; *Kunth*, *Cyp.* 406; *Sartwell, Car. Exs. n.* 30. (TAB. LXXIV.)

HAB. In America Boreali. Cumberland House, *Drummond*. New England to Pennsylvania and Michigan: swamps and woods on mountains, *Carey*.

Culmus gracillimus, debilis, aeute triqueter, scaber, $1\frac{1}{2}$ -2-ped., basi foliatus; pars spicas gerens 8 lin. ad $2\frac{1}{2}$ poll. longa. *Folia* saepè setacea, vel $\frac{1}{2}$ - $\frac{3}{4}$ lin. lata, culmo breviora. *Bractæ* infima eulmo brevior vel longior, altera spicâ mediâ longior. *Spiculae* 2-3, ovales, 2-3 lin. longæ, $1\frac{1}{2}$ -2 lin. latæ, floseulis foemineis 2-5 apice instructæ, basi 1-2 masculis, a se 5 lin. ad $1\frac{1}{2}$ poll. remotæ: infima vel binæ inferiores plus minus longe bracteatae: suprema rarius omnino mascula. *Squamæ* ovatae, acutæ, hyalino-albæ; nervo viridi. *Perigynium* $1\frac{1}{10}$ lin. longum, $\frac{7}{10}$ lin. latum, utrinque crebre leviter nervosum, ore integro, oblique fisso; demum fuscum. *Achenium* lincam longum, $\frac{6}{10}$ lin. latum, oblongo-ovatum, obtusum, plano-convexum, castaneum, lucidum, basi styli æquali decidua.

Allied more closely to *C. canescens*, L., than to *C. Deweyana*, with which Tuckerman places it. In inflorescence they are alike, but the form and texture of the perigynium and the entire oblique orifice prove, as Carey thought, its affinity to *C. canescens* and its allies. Torrey describes the culm as "remarkably smooth," which all my specimens disprove; nor can I detect any roughness on the perigynium. Dewey refers *C. quaternaria*, Spr., to this species, but the description does not apply to it: "fructibus compressis, bifidis, squama obtusa multo longioribus."

74. *C. scabrella* (Wahlenberg); spica elongata laxa pallida demum ferruginea, e spiculis singulis vel spicis partialibus 5-6 ovatis vel oblongis, superioribus sessilibus, inferioribus remotis longe exserte pedunculatis composita; spiculis parvis androgynis apice masculis 1-4 ovatis ad apicem peduncularum congestis sessilibus; bracteis angustis spicis suis longioribus; stigmatibus 3; perigyniis ovalibus triquetris rostratis acute bifidis scabris nervosis viridibus demum ferrugineo-punctatis patentibus, squama ovata acuta hispido-cuspidata fulva lineolis ferrugineis notata longioribus.—*C. scabrella*, *Wahl. Act. Holm.* 149; *Willd.* iv. 247; *Kunth*, 513; *Schk.* 41. *C. laxa*, *Swartz, Fl. Ind. Occ. App.* (TAB. LXXV.)

HAB. In montibus Jamaica, *Swartz*, *Purdie*, *M'Nab*.

Culmus $\frac{1}{2}$ - $1\frac{1}{2}$ -ped., gracilis, rigidus, triqueter, apice scaber, basi vaginis foliorum fusco-ferrugincis tectus; pars spicas gerens saepè e basi porrecta. *Folia* $\frac{1}{2}$ -1 lin. lata, culmo longiora, rigida, apice attenuata, marginibus revolutis. *Bractæ* inferiores vaginatae, foliaceæ: superiores setaccæ. *Pedunculi* 1-8 pollices longi, setacei, scabri. *Spicæ* partiales 5-6, ovatae vel oblongæ, 2-4-stachyæ, 4-10 lin. longæ, 3 lin. latæ: infima saepè radicalis. *Spiculae* (interdum omnes singulæ) 3-4 lin. longæ, basi 2 lin. latæ, apice plus minus masculæ, sessiles, pallidæ, demum ferruginea. *Squamæ* masculæ, lanceolatae, acutæ vel mucronatae, imbricatae: foemineæ patentæ. *Perigynium* $1\frac{6}{10}$ lin. longum, $\frac{6}{10}$ lin. latum. *Achenium* $1\frac{1}{5}$ lin. longum, $\frac{1}{2}$ lin. latum, stipitatum, triquetro-ovalc, fuscum, angulis pallidioribus, basi styli apiculatum.

The female scales are drawn as if entire at the margins, which is not correct. There is a slight roughness on the lower ones, but otherwise they are smooth, and simply marked with ferruginous lines.

In the younger specimens all the spiculae are single, but in the older and larger ones three or four are closely approximated at the extremity of the peduncles. This species and the *C. polystachya* of Swartz are the only ones I have seen from the West Indies; nor am I aware that any others, except *C. cladostachya*, Wahl., have been found in them.

75. *C. aurea* (Nuttall); spicis 4 rariis 3-5 vel 6 pedunculatis gracilibus, terminali mascula breve cylindrica pallide ferruginea rarius basi mascula, reliquis foemineis plerumque laxifloris olivaceis vel aurantiacis, superioribus vel omnibus approximatis, inferioribus longe bracteatis exserte pedunculatis interdum basi compositis, infima saepè radicali subnudante; stigmatibus 2, rarissime 3; perigyniis globosis turgidis obtusissimis vel rarius minime rostellatis, ore integro, valide nervosis glabris granulatis glaucis demum olivaceis vel aurantiacis coriaceis basi spongiosis nunc apice paululum subexcavatis, squama late ovata obtusissima mutica vel abrupte cuspidata rarius acuta ferruginea medio pallida margine albo-hyalina demum pallidiore subaequilata longioribus.—*C. aurea*, *Nutt. Gen.* ii. 205 (1818); *Kunth*, 408; *Schw. et Tor. Mon.* 328. t. 25. f. 2; *Hook. Fl. Bor. Am.* i. 226; *Carey, Gray*,

Bot. 520; *Sartwell, Exs.* n. 65. *C. mutica*, *Brown, Fr. Nar. Ap.* 763 (1823). *C. pyriformis*, *Sehw. An. tab.*; *Dewey, Sill.* ix. 69; x. 48. (TAB. LXXVI.)

HAB. In America Boreali. Lake Michigan, *Nuttall*. Wooded country, Arctic America, lat. 54°–64°, *Riehardson*. Rocky Mountains, *Drummond*. Oregon, *Nuttall* (*Herb. Boott*). Hudson's Bay, *Keppert and Burke* (*Herb. Hooker*). Niagara, *Dewey*. Western parts of New York, *Torrey, Sartwell*.

Cæspitosa, stolonifera. *Culmus* 1–15 poll. altus, gracilis, scabriusculus, basi foliatus; pars spicas gerens 1–4, etiam 10 poll. longa. *Folia* 1–1½ lin. lata, plana, culmo breviora vel longiora. *Bracteæ foliaceæ*: inferiores culmo insigniter longiores, vaginatae: infima sæpe 5–7 poll. longa: suprema sæpe spica sua brevior. *Vagina* infima 1–4 rarius 15 lin. longa, pallida. *Pedunculi* 1–15 lin. (vel infima interdum 6 poll.) longi, scabri. *Spica terminalis* mascula, 4–6 lin. longa, ⅓ lin. lata; vel androgyna, apice foeminea, 2 lin. lata. *Spicæ foemineæ* 3–8 vel 10 lin. longæ, 2 lin. latæ: infima plus minus remota, sæpe radicalis: omnes rarius breve (vel infima solum) vaginatae: laxifloræ, flosculis alternatim in rachim flexuosam dispositis; vel superiores subdensifloræ: infima vel binæ inferiores sæpe basi spiculis 1–2 brevioribus compositæ: spiculæ e perigynio egredientes vel e vaginula aristata exserte pedicellatae. *Squamæ* conformes: masculæ obtusissimæ, rarissime cuspidatae: foemineaæ rarius acutæ. *Perigynium* 1–1½ lin. longum, 7–8 lin. latum: sæpe stylo persistente exerto apiculatum, basi spongiosum, exsiccatione hinc pyriforme. *Achenium* 7–8 lin. longum, 6–7 lin. latum, orbiculatum, basi productum, lenticulare, eximie punctulatum, fuscum. *Stigmata* 2, rarissime 3.

The analysis of 88 specimens is as follows:—

1 had 2 spikes.	75 with the terminal spike male.
16 „ 3	13 with the terminal spike male at base.
53 „ 4	
15 „ 5	
3 „ 6	

In 20 the lower or two lowest spikes were compound, and in 15 the lowest was radical. In one only were there any traces of male florets on the upper female spikes.

This very distinct species, originally found by Nuttall at Lake Michigan, extends from the western parts of the State of New York to the 60° of latitude in Arctic America, and to the Rocky Mountains and the Oregon.

Carey, I think correctly, allies it to the *Paniceæ*, with which its globose, turgid, strongly nerved, and at times evidently subexcavated perigynium unites it. Gay (An. Sc. Nat. 2 ser. xi. 191) includes it in his list of the *Acuteæ*, and Tuckerman, in his group *Bicolores*, between *Limosæ* and *Atratae*. Nuttall places it among the species with three stigmata, and describes it as having three; but though I observe that number, it is the exception.

The specimens from Hudson's Bay are from one to two and a half inches high, with three to five spikes; but Sir John Richardson's, from Carlton House, are nearly as tall as the specimens from the States.

76. *C. lenticularis* (Michaux); spicis 5–6 rarius 2–7, cylindricis obtusis erectis alternatim approximatis, mascula 1 rarissime 2 vel terminali sæpc basi mascula, reliquis flavidopurpureis foemineis, vcl superioribus ima basi masculis, infima subinde remota basi attenuata sæpe vaginata pedunculata, inferioribus longe bracteatis; stigmatibus 2; perigyniis ovalibus vel ovatis cylindrico-rostellatis, ore integro, plano-eonvcxis utrinque 2–5-nervatis pallide viridibus vcl flavidis tenuissime granulatis glabris, squama oblonga rotundato-obtusa purpurea medio late

pallida 1–3-nervata apice anguste albida latioribus longioribusque.—*C. lenticularis*, *Mich. Fl. Bor. Am.* ii. 172 (non Don); *Kunth*, 407; *Gay, An. Se. Nat.* xi. 191; *Hooker, Fl. Bor. Am.* ii. 219; *Carey*, 518. (TAB. LXXVII.)

HAB. In America Borcali: per tractus montium, e Sinu Hudsonis ad Canadam, *Mich. Mackenzie's River* to Canada, *Riehardson, Drummond*. Lake Superior, *Loring*. Lake Avalanche, State of New York, *Torrey, Gray*. White Mountains, New Hampshire, *Tuckerman, Oakes*.

Cæspitosa. *Culmus* 6–15-poll., triquetus, firmus, erectus, laevis, apice scaber, basi foliosus; pars spicas gerens 2½–6 poll. longa. *Folia* 1–2 lin. lata, culmo longiora vel breviora, pallide flavescentia; vaginis sæpe ferrugineo-punctatis. *Bracteæ* inferiores foliaccæ, culmo longiores, basi involutæ, infima sæpe vaginata. *Ligula* elongata, marginibus adnata, purpurea, demum pallida. *Vagina* 2–8 lin. longa. *Pedunculus* infimus 2–9 lin. etiam 2 poll. longus. *Spica terminalis* 8–12 lin. longa, 1–1½ lin. lata, omnino vel subdimidiatim basi mascula, altera minima rarius ad ejus basin sita. *Spicæ* reliquæ 3–18 lin. longæ, 1½ lin. latæ: superiores sæpe plus minus ima basi masculæ: infima semper foeminea, 1½–3 poll. remota, basi attenuata, sæpe exserte pedunculata. *Squamæ* omnes obtusæ, conformes. *Perigynium* ovale, 7 lin. longum, ½ lin. latum, biconvexum, achenium arcte tegens: vel 1½ lin. longum, 7 lin. latum, superne vacuum, plano-convexum, glabrum, leviter sæpe obsolete nervatum. *Achenium* 5–7 lin. longum, ½ lin. latum, fuscum, ovale vel obovatum, basi styli æquali abrupte apiculatum.

Ad *C. tortam*, *Boott*, culmo laevi, perigyniis sæpe ovatis, superne vacuis, accedit. Tamen (æque a *C. verticillata*, *Boott*) spicis erectis nec compositis, superioribus basi (nusquam apice) masculis, bracteis culmo longioribus, ligula elongata, perigyniis nervatis, differt.

In 30 specimens I find—

2 with 2 spikes.	12 with 1 male.
14 „ 5	2 „ 2 males.
13 „ 6	16 „ terminal spike male at base.
1 „ 7	
	8 with upper female, male at base.
	7 „ 2 upper females, male at base.
	1 „ 3 upper females, male at base.

The other specimens are too young to show the distribution of the stamens.

We have no description of this species except by Michaux and Kunth. Its discovery in the State of New York was subsequent to the publication of the first edition of Gray's Flora. Pursh confounded it with *C. granularis*, and Dewey with *C. irrigua*, next to which (*C. paupercula*, M.) Michaux had placed it. He takes no notice of the number of stamens, but describes the perigynium as lenticular, and the terminal spike as male. Kunth, who had authentic specimens, describes it as "inferne mascula." Michaux says, "capsulis muticis," but Kunth, more correctly, "brevissime rostellatis." In the brief mention of it by Gay in the An. Sc. Nat., he notices the variation in the terminal spike, but alludes to the perigynium as nerveless. Kunth more correctly says, "utriculis nervosis." It is an alpine species, growing in moist places. Michaux says he found it "præsertim ad Lacum Cyanorum;" Loring met with it at Lake Superior; Tuckerman at *Willey's Pond*, and Oakes at the *South Notch Pond on the White Mountains*; Torrey and Gray at *Lake Avalanche, New York*.

77. *C. longirostris* (Torrey); spicis 5–6 rarius 3–7 pallidis, masculis 2–3 rarius 1–4, terminali interdum vel infima vel omnibus rarius basi foemineis contiguis oblongis vel cylindricis stramineis, foemincis 2–4 laxifloris re-

motis, suprema evaginata s^epe vel binis superioribus rarius apiee maseulis, longe pedunculatis demum pendulis, inferioribus brevissime vaginatis, infima nunc subradicale longissime exserte pedunculata; stigmatibus 3, longis; perigyniis orbicularis longe linearis-rostratis, rostro margine serrato, ore albo-hyalino obliquo integro vel bifido, pallide viridibus demum stramineis enerviis vel basi obsolete nervatis inflatis facile deciduis, squama ovali lanceolata acuminata acuta euspidata albo-hyalina nervo viridi sebro latioribus longioribus vel subaequantibus.—*C. longirostris*, *Tor. N. Am. Cyp.* 370 (1825); *Dewey, Sill.* ix. 257; *Kunth, Cyp.* 518; *Carey, Gray, Bot.* 535; *Sartwell, Car. Exs. n.* 157. *C. Sprengelii*, *Dewey, Spr. Syst.* 827 (1826). (TAB. LXXVIII.)

HAB. In America Boreali, in sylvis. New England to Michigan, Illinois, Carlton House, *Richardson*. Rocky Mountains, *Drummond*.

Culmus 1½-4-ped., gracilis, triquetus, superne scaber, basi reliquias foliorum fibratis pannosus, foliisque vaginantibus sursum vestitus; pars spicas gerens 6-8, etiam 12 poll. longa. *Folia* 1½-2 lin. lata, culmo breviora, plana. *Bractea* infima foliacea, culmum s^epe aequans, plerumque vaginata: suprema setacea, plus minus longa, s^epe spica sua multo brevior, evaginata. *Vaginae* 1-3 lin. longae: infima spicæ subradicalis interdum pollicaris. *Pedunculi* 3 lin. ad 5 etiam 7 pollices longi, setacei, scabri. *Spicæ masculæ* 5-15 lin. longae, 1-1½ lin. latae, contiguæ, sessiles, vel infima subremota, pedunculata, setaceo-bracteata. *Spicæ fæmineæ* 8 lin. ad 1½ poll. longae, 3-4 lin. latae, a se 8 lin. ad 1-2 infima interdum 5-8 poll. remotæ: suprema s^epe apice mascula: laxifloræ demum pendulae. *Squamæ masculæ* angustiores, lincares, muticæ vel cuspidatæ, albæ, vel stramineæ vel ferrugineaæ, nervo viridi, laxæ vel imbricatae: fæmineæ ovali-lanceolatae, acuminatae, acutæ, cuspidatae vel superiores muticæ. *Perigynium* 3 lin. longum, 1-2 lin. latum: rostro 1-2 lin. longo, pallidior, margine plus minus scabro, ore albo-hyalino demum bifido. *Achenium* 1-2 lin. longum, 1-2 lin. latum, obovato-triquetrum, faciebus superne convexis; inferne excavatis, flavescens, basi styli obliqua crassiori apiculatum.

This example of the *Sylvaticæ* group is found in the northern part of the United States. The analysis of 36 specimens I have examined is as follows:—

5	had 1 male spike;	in 1 female at base.
15	" 2 "	in 2 the two lower female at base.
14	" 3 "	in 1 the terminal, and in 1 all female at base.
2	" 4 "	in 1 all female at base.
6	2 female spikes;	in 2 the upper male at apex.
19	" 3 "	in 11 the upper and 2 the two upper male at apex.
11	" 4 "	in 7 the upper and 1 the two upper male at apex.

The female spikes issue from hyaline ocreæ, which are visible in the upper ones, and in the highest the ocrea at its base has an evident resemblance to a perigynium; but in one of the male spikes, generally the middle one, the spike issues from a distinctly modified perigynium, which is expanded at the orifice, and bearing in some cases traces of stigmata. I have observed this transition from the ocrea to a perigynium in other species, especially in *C. littorea*, from New Holland, and in *C. pumila*, from Japan; the last I think inseparable from the first, judging from specimens which Dr. Asa Gray has kindly enabled me to examine lately, collected by Dr. Morrow, of the United States' Expedition to Japan. This modification of form in the ocrea explains its nature, and also what I had considered as a saccate scale, so remarkable in many of the East Indian panicled species.

78. *C. Cherokeensis* (Schweinitz); spicæ 5-11 pallidis

cylindricis, maseulis 2-3 vel terminali rarius basi fœminea contiguis, fœmineis 3-9 remotis bracteatis, suprema s^epe sessili, reliquis exserte pedunculatis nutantibus simplicibus vel mediis inæqualibus geminatis ternatisve, infima solitaria, omnibus interdum apiee maseulis; stigmatibus 3, longis; perigyniis ovatis vel lanceolatis attenuato-brevirostratis, ore hyalino-albo integro oblique fisso demum rupto, inflatis obsolete nervatis glabris vel superne ad margines parce dentatis pallide stramineis membranaceis, squama lanceolata acuminata acuta vel hispido-euspidata pallida eoneolori latioribus longioribus.—*C. Cherokeensis*, *Schw. An. tab.*; *Schw. et Tor. Mon.* 369. t. 25. f. 1; *Tor. Mon.* 422 (excl. syn. *Muhl. n.* 46, *C. Davisii*, *Tor.*); *Dewey, Sill. Journ.* xi. 160; *Drejer, Symb.* 25. t. 12; *Sartwell, Car. Exsic.* n. 122. *C. recurva*, *Muhl. Descr.* n. 55 (fide *Dewey*). *C. Christyana*, *Boott, Bost. Journ.* v. p. 5. (TAB. LXXIX.)

HAB. In America Boreali et California. Louisiana, *Hale*. Alabama, *Buckley*. Texas, *Drummond*. Santa Rosa Creek, California, *Thurber*, n. 20.

Culmus 1-2½-ped., validus, laevis, inter spicas scaber, apice gracilis, basi foliatus, foliis vaginantibus vestitus; pars spicas gerens 8-14 poll. longa. *Folia* plana, 1½-2 lin. lata, culmo breviora vel aequantia. *Bractæ* foliacea, vaginatae: infima interdum culmum aequans: summa setacea. *Vagineæ* inferiores 1-1½ poll. longae. *Ligula* brevis, ferruginea. *Pedunculi* inferiores 2-3 poll. longi, setacei, scabri. *Spicæ masculæ* 8-20 lin. longae, ½-1 lin. latae, extremæ longiores pedunculatae, vel omnes sessiles: infima bracteata: terminalis rarius basi fœminea. *Spicæ fæmineæ* 6-20 lin. longae, 3-4 lin. latae: suprema s^epe rarius omnes apice plus minus masculæ: omnes simplices, vel mediæ s^epe geminate ternatae: infima solitaria. *Squamæ* pallidæ, concolores: masculæ obtusæ, muticæ: fœmineæ lanceolatae, acuminatae, acutæ, muticæ, vel inferiores plus minus longæ cuspidatæ, rarius emarginatae. *Perigynium* 2-4 lin. longum, 1-2 lin. latum, ovatum, magis turgidum: vel lanceolatum, attenuato-rostratum; rostro plus minus longo, interdum fere omnino albo-hyalino; ore integro, oblique fisso, facile rupto; membranaceum, s^epe sub lente punctis pallide ferruginea maculatum, glabrum vel superne ad unum vel alterum marginem parce dentatum, nervis concoloribus inconspectis. *Achenium* (cum stipite ½ lin. longo) lineam longum, 1-2 lin. latum, orbiculato-trigonum, angulis obtusis pallidis, faciebus ferruginea concaviseulis punctulatum, basi styli æquali apiculatum.

Drejer takes no notice of the fascicled spikes, though one of his specimens figured in his 'Symbolæ' has the upper female one geminate. He describes the orifice of the perigynium, in his specific character, as "bilobo," and in his description as "obliquum, antice profundius fissum." His admirable figure is in accordance. The orifice normally is entire and oblique, but easily ruptured. The perigynium figured Tab. LXXIX. is one of the lanceolate and less turgid form. The nerves are too distinct, and the emargination of the female scale is not typical.

My acquaintance with this species at the time I described Drummond's specimen from Texas, under the name of *C. Christyana*, was limited to the excellent figure and description of Dr. Torrey, in his monograph, and I was misled by the compound inflorescence, especially of the Texan plant, which had not been noticed by any one. The specimen of Thurber, from California, is young, but does not differ in the form of the spikes from Torrey's figure.

The analysis of the specimens I have seen of *C. Cherokeensis* is as follows:—

2 had 5 spikes.	5 had 2 male.
4 „ 6	3 „ 3 male.
1 „ 7	1 terminal, female at the base.
1 „ 8	2 terminal, female at the base,
2 „ 10	and one male.
1 „ 11	
<hr/> 11	<hr/> 11
1 had 3 female, all single.	
4 „ 4 female, all single.	
1 „ 6 female, all single.	
1 „ 4 female, upper one geminate.	
1 „ 4 female, penultimate one geminate.	
1 „ 7 female, two middle ones geminate.	
1 „ 7 female, second ternate, next geminate.	
1 „ 9 female, second ternate, two next geminate.	
<hr/> 11	

79. *C. flexilis* (Rudge); spicis 3–5 ferrugineis denum pallidis subapproximatis, terminali mascula ovali vcl oblonga pedunculata, rclquis foemineis 2–4 oblongis vel cylindricis alternis brevissime vaginatis longe exserte pedunculatis pendulis laxis, infima saepe subremota bracteata rarius (vel summa) geminata; stigmatibus 3, brevibus; perigyniis lanceolatis sensim rostratis pallidis, ore ferrugineo bidentato obliquo ciliato, pellucide punctatis leviter nervatis nervis superne evanidis glabris superne vacuis stipitatis, squama ovata obtusa vel acuta ciliata rarius cuspidata apice ferruginea basi pallida nervo viridi vel pallido longioribus; culmo foliisque pilosis.—*C. flexilis*, Rudge, Lin. Trans. vii. 98. t. 10. f. 1 (1803); Carey, Gray, Bot. 528; Sartwell, Car. Exs. n. 121. *C. blepharophora*, Gray, An. Lyc. iii. 237 (1835); Dewey, Sill. iii. 59 (1836). (TAB. LXXX.)

HAB. Newfoundland, Rudge. Northern part of the State of New York, Gray, etc.

Culmus, folia (infra et ad margines), vaginæ bracteæque pilis longis albis vestitæ!—*Culmus* gracilis, 1–2-ped., firmus, obtusangulus, sulcatus, crectus, laevis, basi rudimentis foliorum purpureis tectus, foliisque vaginantibus inferne vestitus; pars spicas gerens 2–4 poll. longa. *Folia culmea* 1–1½ lin. lata; inferiora brevia, lancolata, sursum longiora, culmo multum breviora; vaginæ inferiores ferrugineæ: *radicalia* 2–3 lin. lata, culmo longiora, subrigida, plana, nervis duobus supra notata. *Bractæ* infima angusta, saepc setacea, culmo brevior: reliquæ plerumque squamæformes, aristatae. *Vagina* infima 2–3 lin. longa, pallida: rclique brevissimæ, saepc hiantes. *Ligula* ad margines bracteæ alligata, pallida. *Pedunculi* 4 lin. ad 1½ poll. longi, setacci, laeves. *Spica mascula* 6–10 lin. longa, 1–2 lin. lata, utrinque acuta, erecta. *Spicæ foemineæ* 4–12 lin. longæ, 2–3 lin. latæ, a se 4 lin. ad 3 poll. remotæ, erectiusculæ vel omnes demum pendulæ: rarius summa vel infima geminata. *Squamæ* omnes ciliatae, pellucide punctatae: masculæ imbricatae, obtusæ vel acutæ; inferiores nervo pallido infra apicem evanescere; superiorcs ad apicem vel paulo ultra attingente, ferrugineæ vel dcmum pallidiores: foeminae laxiores, obtusæ vel acutæ vel cuspidatae, pallidæ vel superne ferruginæ, basi pallidæ. *Perigynium* 2 $\frac{6}{10}$ – $\frac{7}{10}$ lin. longum, $\frac{7}{10}$ – $\frac{8}{10}$ lin. latum, basi obtuse triquetrum, superne vacuum, membranaceum, in rostrum sensim acuminatum; rostro ad apicem rarius dentato; ore antice obliquo, bidentato. *Achenium* 1–1 $\frac{1}{10}$ lin. longum, $\frac{5}{10}$ – $\frac{6}{10}$ lin. latum, oblongo-triquetrum, stramineum; faciebus superne convexiusculis, inferne excavatis; basi styli æquali apiculatum.

This species, originally described by Rudge in 1803, from a

Newfoundland specimen in Herb. Banks, escaped observation till Dr. Gray discovered it in the State of New York, and described it in the 'Annals of the Lyceum' in 1834, under the name of *C. blepharophora*. Kunth and Drejer were not acquainted with it. It would seem to be local in its range in the States, and was not found by the explorers of the Arctic regions.

Dr. Gray places it between *C. sylvatica* and *C. miliacea*. It differs from the *Sylvaticæ* in the rigid hairy leaves and culm, the ferruginous scales without aristæ, the non-membranous orifice of the perigynium, the short stigmata and spikes; but in the occasional tendency to geminate spikes, and in the punctate perigynium, it has some affinity with *C. Cherokeensis*; and to *C. longirostris* in the abbreviate, almost obsolete, bracteal vaginæ. Tuckerman places it in his group *Flexiles* with *C. Cherokeensis*, and Carey adopts this arrangement, associating *C. capillaris* with it, saying nothing of *C. Cherokeensis*, which did not come within the limits of Gray's Flora. It is remarkably constant in the solitary male spike, and in the entire absence of male florets on the female spikes. I have never observed any such at their base, as stated by Carey.

80. *C. Crawei* (Dewey); spicis 4–5 rarius 3–6 oblongis densifloris erectis remotis, terminali mascula pedunculata ferruginea rarius ad ejus basin altera minori arcte sessili, reliquis foemineis flavidis, omnibus inserte vel infima saepe subradicali plus minus longe exserte pedunculata, una vel altera saepe uno latere vel utrinque basi composita; stigmatibus 3, brevibus; perigyniis oblongo-ovalibus vel ovoido-ovatis erostratis vel rostellatis rectis, ore leviter cmarginato vel integro, teretibus vel obtuse triquetris subturgidis nervatis (nervis concoloribus, superne saepe inconspicuis) flavescenti-viridibus postea flavidis dcum ferrugineis, squama late ovata obtusa vcl acuta mutica, vel ad apicem spicæ breve cuspidata castanea, nervo pallido, margine hyalina latioribus longioribusque.—*C. Crawei*, Dewey, Sill. ii. (ser. 2) 246 (1846); Carey, Gray, Bot. 521; Sartwell, Exs. n. 69. *C. heterostachya*, Tbr., Dewey, l.c. 248. (TAB. LXXXI.)

HAB. In America septentrionali. New York to Michigan.

Stolonifera. *Culmus* 5–9-poll., rigidus, obtusangulus, laevis, erectus, saepe curvatus; pars spicas gerens 4–7 poll. longa. *Folia* 1–1½ lin. lata, culmo multum breviora, rigida, saepc conduplicata, curvata, flavescenti-viridia. *Bractæ* vaginatæ, planæ, crectæ, rigidæ, culmo breviores, omnes spicas suis duplo vcl triplo longiores. *Vagina* infima $\frac{1}{2}$ –1½ poll. longa, suprema rarius obsolete. *Pedunculus* infimus 1–2½ poll. longus, obtusangulus, rigidus, crectus, laevis vcl scabriusculus. *Spica mascula* 7–10 lin. longa, 1–2 lin. lata, ferruginea, pedunculata, e spica foeminea 1–1½ poll. remota rarissime medio foeminea; rarius altera arcte contigua. *Spicæ foemineæ* 3–4, rarius 2–5, densifloræ, $\frac{1}{2}$ –1 poll. longæ, 3–4 lin. latæ, a se 1–4 poll. remotæ, una vcl altera basi composita, e ramulis 1–2 perigynio egredientibus. *Squamæ* masculæ oblongæ, obtusæ, muticæ: foeminae vel cuspidatae, vcl inferiores obtusæ, muticæ, superiores breve cuspidatae: omnes nervo pallido, marginc plus minus albo-hyalinæ. *Perigynium* 1 $\frac{5}{10}$ – $\frac{8}{10}$ lin. longum, $\frac{7}{10}$ – $\frac{8}{10}$ lin. latum, (sub lente) granulatum, rectum, rarissime apice subexcurvum, dcum fusco-ferrugineum. *Achenium* 1 lin. longum, $\frac{5}{10}$ lin. latum, trigonum, basi productum, fuscum, punctulatum, basi styli æquali apiculatum.

I find that in sixty-eight specimens,—

5 had 3 spikes.	46 had 1 male.	4 had 2 female.
32 „ 4	19 „ 2	44 „ 3
24 „ 5		18 „ 4
7 „ 6		2 „ 5

In three specimens the terminal male had female florets near

the summit. In five specimens the upper female, and in five the two lower, were compound at the base.

C. microdonta, Tor., and *C. alveata*, B., are not yet sufficiently known.

A. *C. alveata* differt squamis brevioribus uninerviis, perigyniis nervis concoloribus nec prominentibus.

A. *C. microdonta* differt culmo foliis bracteisque rigidis brevioribus, spica mascula sæpius 1 nusquam 3-4, squamis masculis muticis obtusis brevioribus, spicis fœmineis brevioribus latioribusque.

In *C. microdonta* (Drummond, n. 439) bractea infima sæpe pedalis, flaccida.

81. *C. conoidea* (Schkuhr); spicis 3-4 rarius 2 oblongis densifloris, terminali mascula pallide ferruginea pedunculata, reliquis fœmineis subolivaceis bracteatis, superioribus approximatis vel subremotis, suprema sessili, inferioribus exserte pedunculatis, infima sæpe remota nutante; bracteis superioribus culmum subæquantibus; stigmatibus 3; perigyniis ellipticis utrinque obtusis vel apice conicis obtuse triquetris, ore integro, resinoso-punctatis superne pallide viridibus basi ferrugineis glabris crebre nervosis (nervis sulcatis), squama ovata acuta plus minus longe hispido-cuspidata albida medio late viridi trinervi carina scabra longioribus vel brevioribus.—*C. conoidea*, Schk. v. v. v., f. 168; Willd. iv. 280; Kunth, 452; Tuck. En. 15; Tor. Mon. 414; Carey, Gray, Bot. 522; Sartwell, Car. Exsic. n. 82; Hooker, Fl. Bor. Am. ii. 226. *C. granularoides*, Schw. An. tab.; Dewey, Sill. ix. 262, ct x. 47; Kunth, 453. *C. tetanica*, Schw. et Tor. Mon. 347 (non Schk.). (TAB. LXXXII.)

HAB. In America septentrionali. From Canada, Todd, to the mountains of Virginia and North Carolina, Gray, Carey.

Culmus 1-1½-ped., gracillimus, acutangulus, scaberrimus, basi foliorum rudimentis ferrugineis tectus; pars spicas gerens 2½-6, etiam 12 poll. longa. *Folia* 1-1½ lin. lata, culmo breviora. *Bracteæ* (nisi suprema) vaginatae: superiores culmum subæquantes, sæpe longiores: infima co brevior. *Vaginae* triquetrae, scabrae: infima 3 lin. ad 1½ poll. longa. *Pedunculus* infimus ½-5½ poll. longus, scaber. *Spica mascula* ½-1 poll. longa, lineam lata, pallide ferruginea, plus minus longe pedunculata. *Spicæ fœmineæ* 2-3, rarius 1, a se 8 lin. ad 2½ poll., vel infima sæpc 10 poll. remotæ, 4-11 lin. longæ, 2-3 lin. latæ: suprema sessilis: inferiores insertæ vel plus minus longe exserte pedunculatae. *Squamæ* masculæ pallide ferrugineæ, obtusæ, muticæ, nervo viridi infra apicem albidum cyanescente, vel in superioribus paulo extra producto: rarissime lanccolatae, acuminatae, cuspidatae: infima sæpc aristata: fœminæ albidae, margine demum plus minus ferrugineo-tinctæ, medio late viridi trinervi: inferiores plerumque longe acuminato-cuspidatae, perigynio longiores: superiores eo breviorcs. *Perigynium* 1½-7 lin. longum, 6-7 lin. latum, obtuse triquetrum, angulis rotundatis, utrinque obtusum, vel apice subrostellatum, minime subexcurvum. *Achenium* 8-1½ lin. longum, 6 lin. latum, obcordatum, triquetrum, castaneum, basi styli æquali apiculatum.

In forty-six specimens I find—

5 had 2 spikes.	In all 1 male.
25 „ 3	
16 „ 4	

82. *C. Meadii* (Dewey); spicis 3-2 rarius 4-5 oblongis vel cylindricis remotis, terminali mascula pedunculata sæpe elongata ferruginea demum pallida, reliquis fœmineis densifloris crassiusculis, superioribus sessilibus evaginatis sæpe abbreviatis, inferioribus exserte pedunculatis,

infima subinde remota cylindrica basi laxiflora; bracteis culmo brevioribus; stigmatibus 3; perigyniis triquetro-ellipticis utrinque attenuatis, ore integro subexcurvo, crebre nervosis flavidis, squama ovata obtusa mutica vel acuta plus minus cuspidata ferruginea nervo pallido granulato longioribus.—*C. Meadii*, Dewey, Sill. Journ. xlvi. 90 (1842); Tuckerman, En. 15; Sartwell, Exs. n. 80. *C. panicea*, Carey, Gray, Bot. 521. (TAB. LXXXIII.)

HAB. In America Boreali. Ohio, Illinois, Michigan.

Culmus 7-20-poll., subvalidus, firmus, apice scaber, basi foliis vestientibus tectus; pars spicas gerens 2-14 poll. longa. *Folia* 1-2 lin. lata, culmo multum breviora, rigida, pallide viridia, marginibus revolutis. *Bracteæ* foliaceæ, culmo semper breviores: inferiores vaginatae. *Vagina* infima 2-22 lin. longa. *Pedunculus* infimus 4-7 poll. longus, scaber. *Spica mascula* semper unica, 7 lin. ad 1½ poll. longa, 1½-2 lin. lata, plus minus longe pedunculata, cylindrica vel nunc basi acuta, abbreviata, obovata, ferruginea, demum sæpe pallida. *Spicæ fœmineæ* 2-1, rarius 3-4, a se subpollicem vel infima 4-9 poll. remotæ, 5-15 lin. longæ, 3-4 lin. latæ, purpuræ viridi pictæ, demum flavescentes, densifloræ: infima sæpc basi attenuata. *Squamæ* ferrugineo-purpuræ, demum pallidiores, præcipue ad medium granulatae: masculæ sæpc decolores, obtusæ: rarius lanceolatae, subacute, infima rarius aristata: fœmineæ obtusæ, muticæ, vel acuminatae, plus minus (præcipue inferiores) cuspidatae, medio 1-3-nervosæ. *Perigynium* 1-2 lin. longum, ½-1½ lin. latum, demum flavidum, ore ferrugineo vel concolori, tenuissime granulatum. *Achenium* 1-2 lin. longum, ½-1½ lin. latum, trigono-obovatum, faciebus basi excavatis, pallidum, basi styli æquali abrupte apiculatum.

In 102 specimens I observe—

26 with 2 spikes.	In all 1 male.
65 „ 3	
10 „ 4	
1 „ 5	

In one specimen only was the upper female spike male at apex. In three the lower female was compound at base, from an axis bearing a perigynium and scale issuing from a perigynium.

C. panicea, L., cui opt. Carey accedit, certe valde affinis. Differt spicis crassioribus, densifloris, mascula semper unica, subinde longiori; perigyniis triquetris, nec turgidis, magis nervosis, pallidis; squamis longe cuspidatis, 1-3-nervatis; culmo rigidiori, scabro.

Forsan pro varietate majori *C. tetanicae* habenda, quæ solum differt culmo graciliori, lœvi; foliis angustioribus; spicis gracilioribus, magis remotis; squamis fœminis sæpius obtusis, muticis; bracteis longioribus.

83. *C. tetanica* (Schkuhr); spicis 3-2 rarius 4 oblongis vel cylindricis remotis, terminali mascula longe pedunculata ferruginea demum pallida, reliquis fœmineis basi attenuato-laxifloris gracilis omnibus (infima sæpe subradicali longissime) exserte pedunculatis flavidis; bracteis sæpe culmo longioribus; stigmatibus 3; perigyniis triquetro-ellipticis utrinque attenuatis rostellatis, ore integro recto vel subexcurvo, demum flavidis crebre nervosis nervis prominentibus, squama rotundata obtusissima mutica vel ovata acuta abrupte vel sensim cuspidata ferruginea margine albida nervo viridi granulato longioribus vel æquantibus.—*C. tetanica*, Schk. t. 100 et 207; Tor. Mon. N. Am. Car. 414; Dewey, Sill. xi. 312; Carey, Gray, Bot. 521; Sartwell, Car. Exs. n. 68. *C. Woodii*, Dewey, Sill. ii. 249 (ser. 2), 1846; Sartwell, Exs. n. 79. (TAB. LXXXIV.)

HAB. In America septentrionali. New England to Ohio and Michigan.

Culmus 12–18-poll., gracilis, strictus, laevis, inter spicas scabriuscus, basi foliatus; pars spicas gerens 4–9 etiam 18 poll. longa. *Folia* 1 rarius 2 lin. lata, graminea, pallide viridia, culmo breviora, marginibus revolutis. *Bracteæ foliacæ*, vaginatae, culmum æquantes vel eo breviores vel saepe longiores: suprema saepe evaginata. *Pedunculus* infimus 4–6 vel radicalis nunc 12 poll. longus, scutaceus, scaber. *Vaginæ* 4–18 lin. vel infima interdum 3 poll. longa. *Spica mascula* semper unica, 7–21 lin. longa, 1½ lin. lata, cylindrica, ferruginea, demum pallida, a foeminae suprema 1–3 poll. remota. *Spicae foemineæ* 2 vel 1 rarius 3, a se 4–6 etiam 15 poll. remotæ, 5–12 lin. longæ, 2 lin. latæ, graciles, sublaxæ, basi attenuatæ: suprema, si 3 adsint, sessilis, evaginata; si 2 solum, breve insertæ, infima saepe longissime exsertæ pedunculata: demum flavidæ. *Squamæ ferrugineaæ*, nervo pallido-granulatae: masculæ saepius obtusissimæ, muticæ, vel inferiores cuspidatae: infima saepe aristata: foeminae pallidiores, obtusissimæ, vel acutæ, muticæ, vel abrupte vel sensim (interdum omnes, inferiores longius) cuspidatae. *Perigynium* 1 $\frac{3}{10}$ –1 $\frac{9}{10}$ lin. longum, $\frac{8}{10}$ lin. latum, brevius obtusum, hinc obovatum, abrupte rostellatum; vel longius, utrinque attenuatum, rectum, vel apice subexcavatum, obtuse triquetrum, crebre nervosum, nervis prominentibus, granulatum, flavidum, nunquam inflatum. *Achenium* 1–1 $\frac{4}{10}$ lin. longum, $\frac{6}{10}$ – $\frac{7}{10}$ lin. latum, triquetrum, obovatum, basi productum, eastancum, angulis pallidioribus, basi styli æquali abrupte apiculatum. *Stigmata* 3, brevia. *Stylus* interdum incrassatus, granulatus, ex ore perigynii exsertus.

In perigyniis quibusdam achenium invenitur formam quasi squamæ rigidae simulans, marginibus approximatis, processum linearem, stylo cylindrico incrassato apiculatum, involventibus. Hinc stigmata quatuor videantur, tria normalia et unum e processu linearie!

I find in 160 specimens—

37 had 2 spikes.	In all 1 male.
107 „ 3	
16 „ 4	

I have specimens from Dewey from Stockbridge, Massachusetts, with perigynia distorted by the ustilago, like those represented by Schk. g. g. g. His figure 207 is not from a well-characterized specimen.

84. *C. granularis* (Muhl.); spicis 4–5 rarissime 3–6 cylindricis, terminali mascula sessili saepe abbreviata obliqua, reliquis foemineis longe foliaceo-bracteatis densifloris erectis, superioribus 1–2 masculæ arcte contiguis insertæ vel omnibus remotis, inferioribus exsertæ pedunculatis pallide viridibus demum ferrugineis; stigmatibus 3, brevibus; perigyniis ovalibus vel globoso-ovatis antice gibbis turgidis rostellatis apice subexcavatis, ore integro, crebre striato-nervosis basi demum omnino ferrugineis pellicide postea ferrugineo-punctatis, squama late ovata obtusa vel acuminata plus minus longe hispido-valideque cuspidata albida medio viridi trinervi longioribus vel (cuspidate) brevioribus.—*C. grisea*, Wahl. Act. Holm. xxiv. 154 (1803); Carey, Gray, Bot. 522; Sartwell, Exs. n. 83; Darlington, 348. *C. laxiflora*, Schk. f. 141. k. k. k. et aliorum; non Lamarck, Enc. iii. 392 (1789), quæ *C. anceps*, Willd.? (TAB. LXXXVI.)

5 lin. ad 1½ poll. longa, ½–1¼ lin. lata, semper sessilis vel subsessilis, hinc spicam supremam foemineam nunquam multum superans, saepe inconspicua, obliqua, cylindrica. *Spicae foemineæ* 6 lin. ad 1½ poll. longæ, 2–3 lin. latæ: superiores 1–3, contiguae, insertæ pedunculatae, vel omnes 1–7 poll. remotæ, plus minus exsertæ pedunculatae, omnes densifloræ. *Squamæ pallidæ*, demum ferruginea: masculæ lanceolatae, acutæ, vel acuminatae, cuspidatae, rarius obtusæ, saepe sublaxæ: foeminae ovatae, acuminato-cuspidatae, albidae, nervo viridi, demum ferruginea. *Perigynium* ovale vel globosum, antice gibbum, 1 $\frac{3}{10}$ – $\frac{6}{10}$ lin. longum, $\frac{6}{10}$ – $\frac{9}{10}$ lin. latum, plus minus turgide inflatum, (sub lente) scabriuscum. *Achenium* $\frac{8}{10}$ –1 lin. longum, $\frac{5}{10}$ – $\frac{6}{10}$ lin. latum, obovato-triquetrum, demum fuscum, punctulatum, basi styli æquali saepe curvata apiculatum.

Affinis *C. flaccospermæ*. Differt spica mascula semper sessili vel subsessili; perigyniis saepe globosis, gibbis, semper rostellatis, apice excursis; nervis paucioribus, prominentibus, squama acuminata; bracteis longioribus.

In 125 specimens I find—

2 had 3 spikes.	In all 1 male.
65 „ 4	
54 „ 5	
4 „ 6	

In four the lower or two lower female spikes were compound at base, and in one of these the lowest had a small branch on both sides.

This species is common in the middle States, extending from Canada to North Carolina and Florida. It has not been found in the more remote North, and Elliott had not met with it in South Carolina. I have never seen the terminal spike androgynous, as described by Torrey.

85. *C. grisea* (Wahlberg); spicis 5 rarius 4–6 oblongis, terminali mascula abbreviata sessili obliqua rarius pedunculata cylindrica pallide ferruginea, reliquis foemineis foliaceo-bracteatis sub-9- vel 4–13-floris remotis vel superioribus 2 contiguis sessilibus vel inserte vaginatis, inferioribus plus minus longe exsertæ pedunculatis pallide viridibus vel olivaccis demum ferrugineis; stigmatibus 3, brevibus; stylo incrassato; perigyniis oblongis utrinque obtusis subturgidis obtuse trigonis, ore integro, crebre striato-nervosis basi demum omnino ferrugineis pellicide postea ferrugineo-punctatis, squama late ovata obtusa vel acuminata plus minus longe hispido-valideque cuspidata albida medio viridi trinervi longioribus vel (cuspidata) brevioribus.—*C. grisea*, Wahl. Act. Holm. xxiv. 154 (1803); Carey, Gray, Bot. 522; Sartwell, Exs. n. 83; Darlington, 348. *C. laxiflora*, Schk. f. 141. k. k. k. et aliorum; non Lamarck, Enc. iii. 392 (1789), quæ *C. anceps*, Willd.? (TAB. LXXXVI.)

β. *angustifolia*.—*C. laxiflora*, Elliott, Sk. Bot. Car. ii. 549. (TAB. LXXXVII.)

HAB. In America Boreali. Connecticut, Barratt. Massachusetts, Tuckerman. New York, Carey, Sartwell. Kentucky, Short. Ohio, Lesquerelle. Indiana, Clap. Illinois, Mead. Var. β, Texas, Drummond. Louisiana, Hale. Florida, Chapman. Carolina, Schweinitz (fide Elliott).

Culmus 1–2-ped., triquetter, laevis vel apice scabriuscus, basi foliis marcidis vaginatisque vestitus; pars spicas gerens 3–12 poll. longa. *Folia* 2–3 lin. lata, culmo breviora, plana, graminea, pallide viridia. *Bracteæ foliacæ*, erectæ, omnes vel superiores tantum culmo saepe multum longiores: infima saepe 3 lin. lata: summa nunc evaginata. *Vagina* infima 1–3 poll. longa. *Ligula* alba, membranacea, obtusa. *Pedunculus*

HAB. In America Boreali. Canada to Florida.

Culmus 1–2-ped., laevis, basi foliatus, vaginatisque foliorum marcidis tectus; pars spicas gerens 4–12 poll. longa. *Folia* 1–4 lin. lata, culmo breviora, plana, glaucescentia. *Bracteæ foliacæ*, vaginatae: infima 2–3 lin. lata: saepe omnes culmo longiores. *Vagina* infima interdum 2 poll. longa, summa fere obsoleta. *Pedunculus* infimus 2–4 poll. longus. *Spica mascula*

infimus $1\frac{1}{2}$ -4 poll. longus. *Spica mascula* 4-12 lin. longa, $\frac{1}{2}$ -1 lin. lata, nuda, sessilis, obliqua, interdum inconspicua: rarius plus minus pedunculata, cylindrica. *Spiceæ fœmineæ* 4 rarius 2-5, oblongæ, 4-12 lin. longæ, 2-3 lin. latae: superiores 1, plerumque 2 maseulæ arcte contiguae: inferiores a se $\frac{1}{2}$ ad 8 poll. remotæ, subdensifloræ: infima solum basi laxiflora. *Squamæ* albidæ, demum lineolis ferrugineis tinctæ: masculæ angustiores, lanceolatæ, acutæ vel cuspidatae, vel nervo viridi infra apicem obtusum rotundatum evanescente, vel in eadem spica extra producto: fœmineæ late ovatae, obtusaæ vel acuminate, medio viridi trinerves: inferiores saepe longe valideque cuspidatae (hinc perigynio longiores), divergentes: superiores brevius cuspidatae, eo breviores. *Perigynium* $2\frac{2}{10}$ - $4\frac{4}{10}$ lin. longum, 1- $1\frac{2}{10}$ lin. latum, demum sub lente ferrugineo-maculatum. *Achenium* $1\frac{2}{10}$ - $4\frac{4}{10}$ lin. longum, $\frac{9}{10}$ lin. latum, obovato-triquetrum, basi productum, castaneum, punctatum, basi styli æquali apiculatum. *Stylus* insertus, supra basin incrassatus. *Stigmata* brevia.

Var. β ; culmo graciliori; foliis angustioribus; spicis graciebus, laxifloris; perigynis minus turgidis, apice saepe subroseolatis; squamis fœmineis minus nervatis, semper tenuiter cuspidatis; vaginis infimis foliorum purpureis, gaudet. In uno specimine spica infima basi composita.

This plant had been considered as the *C. laxiflora* of Lamarck, until Carey corrected the error in Gray's Botany. The only evidence we have as to the character of *C. laxiflora*, Lam., is from his description from the remarks of Schlechtendal (Linnaea, iii. 258. (1835) on a specimen in Willdenow's herbarium, which he compared with *C. blanda* and *O. oligocarpa*, sent to him by Dr. Torrey. Lamarck's character, "spicis fœmineis filiformibus, floscululis distantibus," and again, "les épis femelles garnies de fleurs alternes, distantes, blanchâtres," (New York, Pennsylvania, Virginia,) will not apply to *C. grisea*, Wahl.

Schlechtendal says that in Willdenow's herbarium, is a specimen, "n. 17,256, *C. nematostachya*, W.," "cum hac diagnosi:" "Spica mascula oblonga solitaria, fœmineis 3 tenuissime filiformibus, infima pedunculata, fructibus oblongo-lanceolatis alternis squama brevioribus;" and Schlechtendal adds, "Specimen Parisiis acceptum, sub nomine *C. laxiflora*, Lam., hæc habet in schedula, Willdenowii manu scripta, 'Est vera *C. laxiflora*, Lam.' Suppetens specimen, planta quidem integra, sed in statu juniore, ita ut difficile est dictu, quacum ex tuis conveniat. *Blandæ et oligocarpæ* valde affinis dicitur, quarum priori adderem, nisi res ambigua esset."

From this it may safely be inferred from Lamarck's description, and from the specimen which Willdenow received from Paris, and which he considered the true *C. laxiflora*, Lam., that that plant is not *C. grisea*, Wahl., but probably a form of *C. anceps*, of which Dr. Torrey considered *C. blanda*, Dewey, to be a variety.

In 70 specimens of *C. grisea* I find—

15 with 4 spikes.	In all 1 male.
49 „ 5	
6 „ 6	

In one only have I seen male flowers at the apex of the female spikes, and no tendency to composition.

This species is common from Connecticut to Kentucky, and westward. Torrey gives it a wider limit. It was not found in Arctic America by Richardson and Drummond, and the only southern form I have seen is the var. β , and the following (unclassifiedly named) species, which I think is distinct from *C. grisea*.

86. *C. flaccosperma* (Dewey); spicis 5-4 rarius 6-7 cylindricis, terminali mascula abbreviata sessili obliqua vel saepe pedunculata clavata, reliquis fœmineis foliaceo-bracteatis multifloris, suprema mascula arcte contigua inserta, inferioribus remotis exserte pedunculatis, infima saepe nutante, pallide viridibus demum ferrugineis; stigmatibus 3, brevibus; stylo æquali; perigynis oblongis utrinque obtusis rarius rostellatis, ore integro

vel emarginato, crebre striato-nervosis basi demum omnino ferrugineis pellucide postea ferrugineo-punctatis, squama late ovata acuta mutica vel mucronata albida demum ferruginea plerumque uninervata plus duplo vel tertio longioribus rarius ad basin (*mucronem*) æquantibus. —C. flaccosperma, Dewey, Sill. ii. (ser. 2) 245 (1846); Sartwell, Exs. n. 84. C. laxiflora, var. β , Torr. N. Am. Cyp. 414; Carey, Gray's Bot. 522. (TAB. LXXXVIII).

HAB. In America Boreali. New Jersey, Knieskern. West Chester, Pennsylvania, Townsend. Louisiana, Hale. Texas, Drummond, 3 Coll. n. 438. 442.

Culmus 1- $1\frac{1}{2}$ -ped., laevis; pars spicas gerens 6-15 poll. longa. *Folia* 2-4 lin. lata, culmo breviora, glauca. *Bractæ* 1- $1\frac{1}{2}$ -3 lin. latae: superiores culmo longiores, omnes vaginatae vel summa rarius evaginata. *Vagina* infima $\frac{1}{2}$ - $1\frac{1}{2}$ poll. longa. *Pedunculus* 1-4 poll. longus, gracillimus. *Spica mascula* 4-14 lin. longa, $\frac{1}{2}$ - $1\frac{1}{2}$ lin. lata, nuda vel saepe bracteata, sessilis, inconspicua vel saepe pedunculo unciali instrueta. *Spiceæ fœmineæ* 9 lin. ad $1\frac{1}{2}$ poll. longæ, 2-3 lin. latae, a se 1-6 poll. remotæ, rarissime superiores apice parce maseulæ, densi-multifloræ, plerumque suprema solum masculæ contigua, rarius evaginata: infima saepe demum nutans. *Squamæ* pallidæ, demum ferrugineæ: masculæ lanceolatæ, acutæ, nervo infra vel extra apicem produeto; in speciminibus Pennsylvanicis obtusæ, muticæ, latiores: fœmineæ late ovatae, acutæ, muticæ, vel nervo centrali saepius solum conspicuo, plus minus in mucronem exserto. *Perigynium* $1\frac{8}{10}$ - $2\frac{1}{2}$ lin. longum, $\frac{8}{10}$ - $1\frac{2}{10}$ lin. latum, scabritie quadam (sub lente) obsitum, utrinque obtusum vel in speciminibus e Louisiana clare rostellatum, ore submarginato. *Achenium* $1\frac{2}{10}$ lin. longum, $\frac{6}{10}$ lin. latum, elliptico-obovatum, utrinque acutiusculum, basi styli æquali apiculatum. *Stylus* æqualis, insertus.

A *C. grisea* differt spicis longioribus, multifloris, densifloris, magis distantibus; squamis saepe muticis, nec unquam longe valideque cuspidatis, minus nervatis; bracteis brevioribus; stylo æquali; foliis bracteisque glaucis.

I have found in 46 specimens—

13 with 4 spikes.	All 1 male.
28 „ 5	
4 „ 6	
1 „ 7	

The upper females rarely with a few male flowers at apex, and the lower as rarely compound at base.

Its range is from New Jersey to Louisiana.

87. *C. laxiflora* (Lamarck). (TAB. LXXXIX.-XCIII.)

1. Perigyniis ellipticis, apice attenuatis; rostro leviter rarius repente excurvo.

A. Foliis angustis.

* Spicis laxifloris, cylindricis, angustis. (Tab. LXXXIX.)

C. laxiflora, Lam.

C. striatula, Mich.

C. anceps, Schw. et Tor. etc.

C. ignota, Dewey.

** Spicis densifloris, oblongis, latioribus. (Tab. XC.)

C. styloflexa, Buckley.

C. fusiformis, Chapman.

B. Foliis latis.

* Spicis laxifloris, cylindricis.

C. plantaginea, Schk. f. 195 (non Lam.).

C. anceps, var. *patulifolia*, Carey, ed. 1.

2. Perigyniis obovatis; rostro abbreviato, repente rarius leviter excurvo.

A. Foliis angustis.

* Spicis laxifloris, cylindricis, angustis.

- a. perigyniis rostro subabbreviato recto vel leviter excurvo.
C. anceps, Willd. iv. 278; Schk. f. 128.
- b. perigyniis rostro breviori, repente excurvo.
(Tab. XCI. Fig. 1.)
- ** Spicis densifloris, oblongis, latioribus.
 - a. major. } (Tab. XCII.)
 - b. minor. }
 - c. gracillima. (Tab. XCI. Fig. 2.)
 - C. blanda, Dewey.
 - C. conoidea, Muhl. (non Schk.).
 - C. anceps, var. striatula, Carey, ed. 1.
- B. Folii latis.
 - * Spicis laxifloris, cylindricis. (Tab. XCIII.)
 - C. anceps, var. latifolia, Short.

87. *C. laxiflora* (Lamarck); spicis 4–5 rarius 3–6 cylindricis, terminali mascula elongata pedunculata rarius abbreviata sessili, reliquis fœmineis elongatis laxifloris remotis, vel superioribus inserte vaginatis contiguis, inferioribus longe exserte pedunculatis, infima sœpe subradicali; bracteis inferioribus culmo brevioribus; stigmatibus 3; perigyniis triquetro-ovalibus utrinque attenuatis obtusangulis apice leviter excurvo vel subrecto, ore hyalino integro oblique secto, nervosis pallidis, squama acuta vel obtusa rarius truncata plus minus cuspidata vel mutica albo-hyalina nervo viridi longioribus vel (*infimis cuspidi*) brevioribus.—*C. laxiflora*, Lam. Enc. iii. 392. *C. striatula*, Mich. ii. 173. *C. anceps*, Schw. et Tor. 343; Dewey, Sill. x. 36; Carey, Gray, Bot. 554. ed. 1; Sartwell, Exs. n. 95. *C. ignota*, Dewey, vi. (scr. 2.) 348; Sartwell, Exs. n. 97. (TAB. LXXXIX.)

HAB. Connecticut to Florida. Oregon, Nuttall.

Culmus 1–1½-ped., gracilis, vel latior, angulis acutis, scabris, basi foliis vaginatis, rudimentis foliorum pallidis tectus; pars spicas gerens 4–15 poll. longa. *Folia* 2–4 lin. lata, culmo breviora, plana. *Bractæ* 1½–4 lin. lata, omnes, nisi suprema interdum setacea, spicis suis longiores: inferiores multum (sœpe omnes) culmo breviores. *Vagina* infima ½–2½ poll. longa: superiores marginibus acutis, apice rarius undulatis. *Ligula* alba, membranacea, obtusa, fissa: infima demum rupta. *Pedunculus* infimus 2–6 poll. longus, scaber, acutangulus, basi compressus. *Spica mascula* 6–16 lin. longa, lineam lata, plus minus longe pedunculata, basi attenuata, rarius subsessilis, inconspicua. *Spicæ fœmineæ* 10–19 lin. longæ, 1–2 lin. latae, omnes cylindricæ, remotæ, laxifloræ, flosculis (1–2 supremis sœpe abortivis) alternatim dispositis, inferioribus magis distantibus: vel superiores interdum oblongæ, subdensifloræ, masculæ contiguae: una vel altera basi, e perigynio proliferò, composita: rachis apice alternatim oblique flexuosa. *Squamæ* albo-membranacea, nervo viridi, demum masculæ præcipue, pallide ferruginea: masculæ lanceolatae, obtuse, rarius acutæ, nervo infra apicem evanescente, vel in supremis subinde extra producto: infima breve cuspidata: fœmineæ acutæ, rarius obtusissimæ, truncatæ, plus minus cuspidatae, vel superiores præcipue obtusæ, muticæ. *Perigynium* 1½–2½ lin. longum, ½–1 lin. latum, plus minus apice attenuatum, leviter excravum, vel subrectum; ore hyalino, oblique secto, integro, rarius emarginato. *Achenium* 1–1½ lin. longum, ½–1 lin. latum, obovato-triquetrum, castaneum, punctulatum, basi styli obliqua vel recta apiculatum.

This, I think, may be considered as the typical form of *C. laxiflora*. Both Schkuhr and Willdenow refer the name of *C. anceps* to Muhlenberg, though in his 'Descriptio Uberior,' published eleven years after Schkuhr's Second Part, there is no species so named. The only reference to *C. anceps* in it is, as a synonym,

with a query, under *C. plantaginea*, to which Muhlenberg probably referred the broad-leaved variety. It is singular that if Muhlenberg had this variety he should have omitted all reference to Schkuhr's fig. 195. He quotes fig. 128, and yet, after giving *C. heterosperma*, Wahl., as a synonym, he adds, " *C. anceps*, Schk. ?," as if he had doubts of his previous reference to the figure of that species. Schlechtendal (Linnaea, iii. 1835) refers all the specimens in Willdenow's Herbarium to *C. blanda*, Dewey. In answer to Dr. Torrey, he says: " *C. anceps*, 17,227: spec. folii primi a Muhlenberg data sunt; secundi ab alio accepta. 'Carex, Wilmington, Carol. sept.' Hæc omnia ad *C. blanda*, Dewey, abs te acceptam, pertinent." Yet Dewey (Sill. Journ. xxv. 144) remarks that the *C. conoidea* of Muhlenberg's herbarium is *C. blanda*. It is impossible from this confusion of specimens to quote accurately the synonymy of the varieties I have ventured to enumerate; but any one who will compare Dewey's description of *C. blanda* with the fig. 128 of Schkuhr will find it impossible to distinguish the one from the other, and I have not hesitated to quote that figure under the second division of the varieties I have proposed. It has not the fully attenuated apex of the perigynium, nor the greater laxity of the female spikes, which I consider to be the distinguishing character of the typical form, and in so placing it I have the authority of Schlechtendal, who pronounced Willdenow's specimens to be *C. blanda*. Dr. Torrey (Schw. and Tor. Mon. 343) says: "Willdenow received from Muhlenberg all the North American *Carices*, of which he has given descriptions, and the identical specimens were by him communicated to Schkuhr, who had no others from this country. This fact was told us by Prof. Willdenow himself a short time before his death."

The varieties I have indicated will serve, I think, to make *C. laxiflora* better known. I can see no characters to justify a specific distinction in the southern *C. ignota*. I find nearly the same elongation of the perigynium (2–2½ lin.), alluded to by Dewey, in specimens from Pennsylvania and elsewhere, and it is exceeded in this respect (2½ lin.) by the specimens I have from the Oregon, from Mr. Nuttall. The greater or less attenuation of the apex of the perigynium is in fact visible occasionally on one and the same specimen; nor is there a single character, whether form of the perigynium or scale, length of the bracts or vaginæ, breadth of leaves or culm, but varies so much as to forbid of our availing of either for specific distinctions. Any one meeting for the first time with the specimens (Tab. XCII. Fig. 1, from Texas; and Tab. LXXXIX. from Florida), and comparing them, might reasonably consider they were different species; but on a larger acquisition of specimens, he would find intermediate forms that almost insensibly unite them: and the—perhaps inevitable—perplexity of the synonymy of *Carex* has arisen from species having thus been made from isolated specimens, rather than from a critical examination of the varied forms which now enrich our herbaria. I have had the opportunity of comparing my own with the very extensive suite of specimens in Herb. Carya, and the result is the tabular view here given of the varieties of *C. laxiflora*.

With respect to the name of this species, that of Wahlenberg, published in the Act. Holm. 1803, should have had preference over that of Muhlenberg, published by Willdenow in 1805; but Lamarck had described it as early as 1789 (Ency. iii. 392) under the name of *C. laxiflora*. His description is, "Spicis fœmineis filiformibus axillaribus erectis, flosculis distantibus, foliis planis." "Ses tiges viennent en touffes, 7–9 pouces. Feuilles larges de 2½–3 lignes. L'épi mâle à peine long d'un pouce, droit, pâle ou jaunâtre. Les épis femelles 3, filiformes, long d'un pouce, garnis de fleurs alternes, distantes, blanchâtres, à écailles mucronées et membraneuses.—New York, Pennsylvania, Virginia."

Though Poiret (Suppl. Ency. iii. 243. 1813) quotes (under Lamarck's *C. laxiflora*) Willdenow and Schkuhr's fig. 141, which belong to *C. grisea*, Wahl., this affords no evidence that he had seen Lamarck's specimen, which Schlechtendal, judging from an authentic one in Herb. Willdenow (17,256), considered to be *C. blanda*. I have referred *C. striatula*, Mich., here, as his specimen in the Herbarium of the Garden of Plants at Paris clearly belongs to the typical form. I have confined myself to limit the geographical range of the different varieties by the evidence derived from specimens in my own and Mr. Carya's herbarium.

In 97 specimens of the typical form I find—

28 with 3 spikes.	In 2 only the lower female compound
42 " 4	at base; in one the terminal spike
24 " 5	male at base.
3 " 6	
<hr/>	
97	

87. Var. β . *styloflexa*; spicis 3–4 rarius 5, terminali maseula cylindrica sessili vel pedunculata, reliquis fœmineis abbreviatis vel oblongis remotis vel superioribus 1–2 masculæ contiguis sessilibus, inferioribus remotis longe exserte setaceo-pedunculatis pendulis, omnibus densifloris vel infima basi laxiflora; bracteis inferioribus vel omnibus culmo brevioribus; stigmatibus 3; perigyniis ellipticis utrinque attenuatis demum plus minus excurvis, ore membranaceo integro oblique secto vel emarginato, squama ovata vel lanceolata acuta plus minus cuspidata rarius obtusa mutica alba nervo viridi longioribus.—C. *styloflexa*, Buckley, Sill. Journ. xlv. 174; Dewey, Sill. xlvi.

141. C. *fusiformis*, Chapman, MSS. (TAB. XC.)

HAB. Mountains of Carolina and Georgia, Tennessee, Buckley. Raleigh, North Carolina, Curtis. Louisiana, Hale. New Orleans, Drummond, 427. Middle Florida, Chapman. Texas, Wright.

Culmus gracilis, 2–2½-ped. *Folia* 1–2 lin. lata. *Bractea* suprema sæpc obsoleta. *Vagina* infima 2–3 poll. longa. *Pedunculus* infimus interdum 10 poll. longus, capillaris, basi anceps. *Spica mascula* 8–16 lin. longa, rarius apice fœminea. *Spicæ fœmineæ* 4–5 vel 9 lin. longæ, 2–4 lin. latæ: inferiores nunc basi compositæ. *Squamæ masculæ* lanceolatae, obtusæ vcl acutæ, albæ, nervo viridi infra apicem, nisi in supremis, evanescente, demum ferrugineæ. *Perigynium* 2–2½ lin. longum, ¼ lin. latum. *Achenium* 1½ lin. longum, ¼ lin. latum.

C. fusiformis, Chapman, in my own and Mr. Carey's herbarium, is in a younger state than the specimens of Buckley and Hale, and has the perigynium less excurved, and the female spikes longer, showing a transition from the abbreviate to the cylindric form of the spikes of the typical form, though they are all, except the lowest one at base, more densely flowered. They show also a transition into what Dewey has described as *C. ignota*. The specimens of it are more mature, and more or less lax-flowered, and the perigynium more or less excurved, its orifice oblique, entire or emarginate, and the lower peduncle often setaceous and pendulous. I can see no fixed characters that may serve to distinguish these varieties, and Mr. Curtis (Sill. Journ. vii. 410. 1849) observes that *C. styloflexa*, which he says is common in the lower and middle region of North Carolina, and which he has received from Louisiana and Florida, "is a doubtful species." Dewey describes the orifice of the perigynium as bidentate, though Buckley omits all allusion to such a character. I believe the normal state of it is entire or oblique, but from its delicate membranous texture it is easily ruptured.

Of 36 specimens I find—

13 with 3 spikes.	In 1 the terminal spike is male at base,
20 " 4	and in 4 the lower females compound
3 " 5	at base.

In one floret I observed a filiform racheola, shorter than the achene; and in the specimens from Florida there is occasionally a slight tendency to roughness at the upper margins of the perigynium.

87. Var. γ . *plantaginea*; foliis culmeis bracteisque inferioribus 3–4 lin. latis, radicalibus 5–7 lin. latis 6–15 poll. longis, spicis cylindricis laxifloris, mascula rarius abbreviata (Schk. f. 195).—C. *plantaginea*, Schk. f. 195. k. k. k. (non Lamarck); Muhl. 245. C. *anceps*, var. *patulifolia*, Carey, Gray's Bot. l. c. ed. 1.

This differs from the typical form only in the breadth of the radical leaves. It is distinguished from the true *C. plantaginea*, Lam., by its foliaceous bracts.

87. Var. δ . *intermedia*.

a. Perigyniis apice subabbreviato recto vel leviter excurvo. C. *anceps*, Willd. iv. 278; Schk. f. 128. f. f. f.

b. Perigyniis apice breviori repente excurvo. (TAB. XCI. Fig. 1.)

Spicis 4–5 cylindricis, fœmineis laxifloris angustis 6–13 lin. longis 1½–2 lin. latis.

HAB. a. Providence, Rhode Island, Olney. Oriskany, New York, Vasey.—b. Clinton County, Pennsylvania, M' Minn. Fernbank, Ohio, Short (Herb. Carey). Quebec, Mrs. Shepperd.

In a, perigyniis 1½–2 lin. longis, ¼ lin. latis; in b, perigyniis 1½ lin. longis, ¼ lin. latis. In both the achene ½–1 lin. longum, ¼ lin. latum, basi styli obliqua abrupte apiculatum.

The narrow lax spikes, and the subabbreviate, slightly-curved or straight apex of the perigynium connect the var. a with the typical form; while the more abbreviated and abruptly curved apex of b connect it with the following var. e. I have received them both at different times under the names of both *C. anceps* and *C. blanda*.

87. Var. e. *blanda*.—a. *major*; spicis 4–5 rarius 6 oblongis, terminali mascula sæpius abbreviata vel clavata subsessili, reliquis fœmineis undique densifloris, omnibus vel superioribus 2–3 masculæ arcte contiguis, supremis evaginatis, inferioribus remotis longe exserte pedunculatis, infima rarius subradicali; bracteis culmo sæpe multum longioribus; perigyniis triquetro-ovatis apice brevissimo repente excurvo ore (vix membranaceo) integro vel emarginato nervosis, squama obtusa sæpe truncata vel acuta plus minus cuspidata albo-hyalina nervo viridi longioribus vel (*infimis cuspide*) brevioribus. (TAB. XCII. Fig. 1.)

HAB. New Orleans, Texas, Drummond, n. 428 bis, et 437. Texas, Wright. Louisiana, Hale. Ohio, Sullivan. Massachusetts, Tuckerman.

Culmus 15–20-poll., angulis acutis scabris; pars spicas gerens 4–14 poll. longa. *Folia* 1–3 lin. lata, culmo longiora vel breviora. *Bractæ* 1–3 lin. latæ, omnes sæpius culmo multum longiores, vcl suprema interdum setacea infirmae subradicalis cum subæquantes. *Vagina* infima 1–3 poll. longa: omnes, præcipue superiores, angulis acutis, undulatis, scabris. *Pedunculus* infimus 3–6 poll. longus, vel (in spicis omnibus congestis) 6 lin. longus, basi anceps, scaber. *Spica mascula* 4–7 lin. longa, lineam lata, sessilis vel subsessilis, sæpe bracteata, albida, demum pallide ferruginina, cylindrica vel clavata, obliqua vel erecta. *Spicæ fœmineæ* 5–7 lin. longæ, 3 lin. latæ, densifloræ, (vel in speciminibus septentrionalibus angustiores, minus densæ, infima sublaxiflora,) rarius omnes vel superiores, 2–3 tantum (sessiles vel inserte vaginatae) masculæ contiguae: reliquæ deorsum remotiores, longe exserte pedunculatae: superiores interdum apice extremo masculæ: una vel altera inferiorum sæpe basi (ramulis 1–3, c perigynio egredientibus) composita. *Squamæ* albo-hyalinæ, nervo viridi, demum pallide ferrugininae: masculæ lanceolatae, acutæ; inferiores, more bractearum, longe cuspidatae, nervo in aliis producto: fœmineæ acute vcl obtuse, nunc truncatae; inferiores, vel omnes, longe cuspidatae. *Perigynium* 1½–2 lin. longum, ¼–½ lin. latum; apice brevissimo, plus minus repente excurvo; obtusangulum, basi productum. *Achenium* 1–1½ lin. longum, ¼ lin.

lin. latum, triquetro-obovatum, basi styli obliqua abrupte apiculatum.

Var. *c. blanda*.—*b. minor*; culmo 6–12-pollicari; foliis 1–3 lin. latis; bracteis foliaceis, infima fere semper culmo multum breviori; spicis 4–5 rarius 3–6 densifloris, superioribus masculæ plurumque contiguis, infima plus minus remota saepe basi laxiflora, mascula saepe abbreviata bracteata; squamis masculis latioribus obtusis muticis vel breve cuspidatis.—*C. conoidea*, Muhl. 248 (*non Schk.*); Schw. et Tor. 346. *C. blanda*, Dewey, Sill. x. 45; Sartwell, Exs. n. 96. *C. anceps*, var. *striatula*, Carey, l. c. (TAB. XCII. Fig. 2.)

HAB. Canada to Kentucky.

Var. *c. blanda*.—*c. gracillima*; culmo gracili sesquipedali; foliis lineam latis; bractea infima culmo multum breviori; spicis 3–4, mascula cylindrica nuda saepius longe pedunculata, foemineis angustioribus remotis, summa interdum abbreviata masculæ arcte contigua sessili vel oblonga ab ea 1–2 poll. remota, reliquis distantibus, infima 5–7 poll. remota basi laxiflora; perigyniis (ut in *b.*), squama obtusa saepe truncata cuspidata vel mutica vel abrupte apiculata longioribus. (TAB. XCI. Fig. 2.)

HAB. Ohio, Sullivant.

Bractea suprema saepe obsoleta, spiea sua abbreviata vix longior; vel omnes spieis suis semper, saepe multum, longiores: infima eulmo multum brevior. *Spica mascula* 6–13 lin. longa, creeta. *Spicae foeminae* 2–3: summa nune 2–3 lin. longa, maseulæ contigua, vel oblonga, remota: reliqua 7–9 lin. longæ, 2 lin. latæ; distantes, basi laxifloræ. *Squamæ* maseulæ obtusæ, muticæ, nervo rarius producto; infima interdum breve euspidata: foemineæ obtusæ, saepe truncatæ; inferiores breve euspidatae, superiores muticæ vel abrupte apiculatae: vel omnes euspidatae.

87. Var. *g. latifolia*; culmo latiori, angulis acutissimis; foliis subinde 15 lin. latis, 5–15 poll. longis; bracteis 5–8 lin. latis; spica mascula saepe inconspicua 3–9 lin. longa, foemineis laxifloris; perigyniis (1 $\frac{7}{10}$ –2 $\frac{2}{10}$ lin. longis, $\frac{8}{10}$ –1 lin. latis) ore membranaceo integro apice abbreviato leviter vel repente excurvo, squama obtusissima truncata mutica vel abrupte apiculata latioribus duploque longioribus. (TAB. XCIII.)

HAB. New York, Knieskern. Ohio, Sullivant. Kentucky, Short.

I have found in 34 specimens of *a, major*—

12 with 4 spikes.	In 23 the lower females (1 or 2) were
21 „ 5	compound at base, with 1–3 branches
1 „ 6	proceeding from a perigynium.

In one the terminal spike was male at base.

In *b, minor*—

13 with 3 spikes.	
50 „ 4	No composition!
32 „ 5	
2 „ 6	
<hr/> 97 specimens.	

In *c, gracillima*—

19 with 3 spikes.	In 2 the lower female was compound
35 „ 4	at base.
4 „ 5	
<hr/> 58 specimens.	

In var. *latifolia*—

3 with 3 spikes.	In 1 the lower female was compound
16 „ 4	at base.
1 „ 5	
<hr/> 20 specimens.	

I have drawn the character of this variety, *blanda*, from the southern localities, where it would seem to have its largest development. The specimen figured (TAB. XCII. Fig. 1) is one of Drummond's, from Texas; Fig. 2 I received from Dewey as *C. blanda*. Though I have separated the one from the other, they are essentially the same, and I have no doubt but that intermediate states may be easily found to connect all the three. The habit of *c* is more that of the variety *styloflexa*. It is remarkable how frequently the lower spikes are compound in *a*, probably dependent on its greater luxuriance.

The variety *latifolia* would seem to be more decidedly separated from its allies by the breadth of its leaves and bracts, than the var. *plantaginea* is from the typical form.

88. *C. plantaginea* (Lamarck); spicis 4–5 oblongo-cylindricis remotis, terminali mascula atro-purpurea concolori, reliquis foemineis olivaceis subgracilibus laxifloris, superioribus insertis inferioribus exserte pedunculatis, infima saepe radicali, vaginis purpureis aphyllis cuspidatis; stigmatibus 3; perigyniis ovalibus utrinque attenuatis acute triquetris apice subexcurvis, ore membranaceo integrō saepe oblique secto, crebre leviter nervosis olivaceis furfuracco-asperulis, squama ovata acuta acuminato-cuspidata purpurea margine albida vel pallida plus minus purpureo-tincta, nervo viridi, latioribus longioribusque.—*C. plantaginea*, Lam. Encyc. iii. 392; Mich. ii. 173; Willd. iv. 257; Kunth, 452 (*excl. syn. Schk. f. 195*); Schw. et Tor. 342; Dewey, Sill. vii. 272, et xi. 155; Carey, Gray, 523; Sartwell, Exs. n. 90 (*non Muhl.*, nec Elliott, *nec Schk.*). *C. latifolia*, Wahl. Act. Holm.; Schk. f. 70. u. (TAB. XCIV.)

HAB. Norway to Cumberland House, Arctic America, Drummond. New York, Sartwell, Knieskern.

Culmi plures ex eadem radiee, 1–1 $\frac{1}{2}$ -ped., gracieles, triquetri, basi vaginis purpurcis aphyllis tecti, eretii, demum deumbentes; pars spieas gerens 8–15 poll. longa. *Folia radicalia* $\frac{1}{2}$ –1 poll. lata, eulmo breviora vel subaequantia, firma, nervis 2 lateralibus prominentibus notata: saepe basi purpurea. *Vaginæ* floriferae purpureæ, euspidatae, 4 lin. ad pollieem longæ. *Pedunculi* inferiores 2–3 poll. longi, gracielli. *Spica mascula* 7–12 lin. longa, 1–1 $\frac{1}{2}$ lin. lata, pedunculata vel subsessilis. *Spicae foeminae* 4 lin. ad pollieem longæ, 1 $\frac{1}{2}$ –2 lin. latæ, 4–12-floræ, a se 1 $\frac{1}{2}$ –6 poll. remotæ, summa nune maseulæ arete contigua, saepius 1–2 poll. remotæ: infima saepe radiealis. *Squamæ* maseulæ atro-purpureæ, eoncolores, subobtusæ: foemineæ purpureæ, nervo pallido: vel albidae plus minus purpureo tinetæ. *Perigynium* 2 lin. longum, $\frac{8}{10}$ – $\frac{9}{10}$ lin. latum. *Achenium* 1 $\frac{3}{10}$ lin. longum, $\frac{7}{10}$ – $\frac{8}{10}$ lin. latum, aeute triquetrum, faciebus eoncavis.

I have seen no specimen of this beautiful species south of New York; and though I have quoted Michaux, it is evident that he confounded either *C. platyphylla* or *C. laxiflora* with it, from his observation that it varies "vaginis aphyllis aut in foliolum desinentibus, spieisque castaneis et viridulis." I have never seen any foliaceous vaginæ, the absence of such separating *C. plantaginea* from *C. laxiflora* and *C. Careyana*.

Schkuhr's fig. 70 u. is an exception to the exquisite truthfulness of his pencil. Kunth notices the anomaly of the long, stipitate achene in it. In the mature achene the stipe is broad, and not more than one-tenth of a line long.

In 95 specimens of *C. plantaginea* I find—

53 with 4 spikes.	All with 1 male.
42 „ 5	

89. *C. Careyana* (Torrey); spicis 3 rarius 2–4, terminali mascula ferrugineo-purpurea pedunculata vel subsessili, reliquis foemineis remotis olivaceis oblongis paucifloris, suprema inserte, infima vel inferioribus saepe longe exserta pedunculatis; bracteis foliaceis; stigmatibus 3; perigynis ovalibus utrinque attenuatis acute triquetris apice subexcurvis, ore membranaceo integro, crebre leviter nervosis olivaceis furfuraceo-asperulis, squama ovata acuta cuspidata vel obtusa mutica purpurea vel albida plns minus purpureo tincta, nervo viridi, latioribus longioribusque.—*C. Careyana*, Torrey, Dewey, Sill. xxx. 60; Tor. Mon. 415; Carey, Gray, Bot. 523; Sartwell, Eas. n. 91; Kunze, t. 27. (TAB. XCV.)

HAB. New York and Ohio.

Culmi plures, 1½–2-ped., triquetri, graciles, basi rudimentis foliorum rubro-purpureis, foliisque 2–3 brevibus vaginatis tecti; pars spicas gerens 2–15 poll. longa. *Folia culmea* 1½–2 lin. lata, brevia: *radicalia* 5–6 lin. lata, culmo breviora, plana, mollia, nervis 2 lateralibus prominentibus demum notata. *Bracteæ* foliaceæ, 1–3 lin. latæ: inferiores spieis suis longiores vel breviores: vaginatæ, suprema saepe obsoleta. *Vagina* infima ½–2 pollices longa: suprema obsoleta vel saepe fissa: omnes virides vel basi purpuræ. *Pedunculus* infimus ½–6 poll. longus, gracillimus. *Spica mascula* 6–18 lin. longa, 2 lin. lata, elliptica vel cylindrica vel clavata, erecta, plus minus pedunculata. *Spicæ fæmineæ* 4–9 lin. longæ, 3–4 lin. latæ, 3–9-floræ: summa saepe masculæ arcte contigua, subsessilis, 3–4-flora, vel ab ea 1–4 pollices remota, oblonga: inferiores a se 4–10 pollicies remotæ, plus minus longe exserte pedunculata: omnes subdensifloræ vel infima laxiflora. *Squamæ* masculæ ferrugineo-purpureæ, nervo pallido, obtusæ, muticæ; infima saepe breve cuspidata: foemineæ purpureæ, vel albidae plus minus purpureo tinctæ, obtusæ vel acutæ, cuspidatae vel superiores muticæ. *Perigynium* 2½–3 lin. longum, 1–1½ lin. latum. *Achenium* 1½ lin. longum, lineam latum, breve stipitatum, acute triquetrum, faciebus coneavis basi styli obliqua apiculatum.

A *C. plantaginea* differt, culmo basi foliato; foliis radicalibus angustioribus; vaginis floriferis foliaceis, viridibus; spicis paucioribus, latioribus, paucifloris; pedunculis longioribus; perigynis majoribus; squamis masculis obtusis.

This very interesting species was discovered by Mr. Carey in woods at Auburn, New York, in 1832, growing among decayed leaves, not in swamps, as stated by Dewey, and it was named after him by Dr. Torrey. For some time this was the only known habitat, until Mr. Sullivant found it plentifully near Columbus, Ohio.

90. *C. platyphylla* (Carey); spicis 3–4 rarius 5 graeilibus, terminali mascula oblongo-elliptica vel ovali pedunculata nuda, reliquis foemineis oblongis laxifloris remotis paucifloris subinserte pedunculatis erectis, infima saepe radicali; bracteis lanceolatis spicis longioribus; stigmatibus 3; perigynis ovalibus acute triquetris apice attenuatis subinde rostellatis excurvis, ore membranaceo integro, crebre leviter nervosis olivaceis furfuraceo-asperulis, squama lanceolata vel ovata acuminata albida nervo viridi longioribus vel (*infimis*) subæquantibus.—*C. platyphylla*, Carey, Sill. Journ. iv. (ser. 2) 23 (1847); Carey, Gray, Bot. 523; Dewey, Sill. vi. 349; Sartwell, Eas. n. 92; Darlington, 350. *C. digitalis*, var. *latifolia*, Gray. *C. anceps*, var. *latifolia*, (*ex parte*), Auct. (TAB. XCVI.)

HAB. In America septentrionali, in declivibus umbrosis. Massachusetts to New York, Carey.

Culni ex eadem radice plures, 3–5 vel 8–12 poll. longi, debiles, laeves, patuli, demum decumbentes; pars spieas gerens 2–11 poll. longa. *Folia culmea* 2–3, brevia, 1–2 lin. lata: *radicalia* 5–8 lin. lata, 3–5 poll. longa, culmo breviora, glauca, mollia: *annotina* demum pollicem lata, saepe viridia, 8 poll. longa, nervis 2 lateralibus prominentibus notata, eulmis breviora. *Bracteæ* 1–3 lin. latæ, 1–1½ vel 2 poll. longæ, lanceolatae, spieis suis duplo rarius triplo longiores. *Vagina* omnes plerumque breves: infima subinde polliearis. *Pedunculi* inserti vel breve exserti: infimus nunc 1¼ poll. longus. *Spica mascula* 2–4 vel 7 lin. longa, ½–1½ lin. lata, plus minus pedunculata, nuda, saepe bractea cuspidata sterili plus minus ab ejus basi remota, eastanea. *Spicæ fæmineæ* 3–8 lin. longæ, 1½ lin. latæ, 2–5- vel 7-floræ (flosculis alternatim dispositis, summis saepe abortivis): omnes subinserte vel breve exserte pedunculatae, erectæ. *Squamæ* masculæ latiores, obtusæ, muticæ: vel subacutæ, infima nunc breve cuspidata: castaneæ margine pallidæ: foemineæ ovatae, acutæ, muticæ vel cuspidatae, albæ vel castaneæ. *Perigynium* 1½–1¾ lin. longum, ½ lin. latum, furfuraceo-asperulum, olivaceum, facile deciduum. *Achenium* 1½ lin. longum, ½ lin. latum, ovale, acute triquetrum, castaneum, basi styli apiculatum.

Habitu ad *C. laxifloram*, var. *plantagineam*, accedit. Differt culmo spicis bracteisque brevioribus; spicis foemineis paueifloris, subinserte pedunculatis, nusquam compositis; perigyniis brevioribus, utrinque præcipue basi minus attenuatis, acutangulis, ore integro, nee oblique secto: nervis pluribus tenuioribus: olivaecis, furfuraceo-asperulis, facile deciduis; foliis radicalibus brevioribus, latioribus.

Ad *C. digitalem*, W., proprius attinet. Tamen ab ea et a *C. retrocurva* differt, spieis erectis, paucifloris, subinserte pedunculatis; bracteis brevioribus; pedunculis validioribus; foliis latis; perigyniis deeiduis. A *C. retrocurva* etiam spicis laxifloris, nec unquam basi masculis.

This pretty species has been frequently confounded with *C. laxiflora*, Lam., (*C. anceps*) and also considered a wide-leaved variety of *C. digitalis*. Its characters are so constant that I think Mr. Carey was right in separating it. I find in 240 specimens—

90 with 3 spikes. In all 1 male.

133	"	4
17	"	5

91. *C. retrocurva* (Dewey); spicis 4–6 rarius 3–6, terminali mascula pedunculata cylindrica, vel abbreviata elliptica, reliquis foemineis saepe ima basi masculis remotis densifloris abbreviatis obovatis, vel oblongo-cylindricis longe exserte pedunculatis pendulis, infima radicali; bracteis spicis longioribus; stigmatibus 3; perigyniis triquetro-ovalibus apice acutis subinde rostellatis excurvis, ore membranaceo integro, crebre leviter nervosis olivaceis furfuraceo-asperulis, squama lanceolata vel ovata acuminata albida nervo viridi longioribus vel (*infimis*) subæquantibus.—*C. retrocurva*, Dewey, Wood. Bot. ed. 2. 587 (1848); Carey, Gray, Bot. 523; Sartwell, Eas. n. 93. *C. oligocarpa*, var. *latifolia*, Gray, Gr. et Cyp. n. 178; Tor. Mon. 415. (TAB. XCVII.)

HAB. In America septentrionali. New England to Pennsylvania.

Culmus 8–18-poll., gracillimus, debilis, acutangulus, scaber; pars spieas gerens 7–17 poll. longa. *Folia radicalia* 3–5 lin. lata, demum firma, culmum subæquantia, nervis 2 lateralibus prominentibus notata, pallide viridia, vel glauca. *Bracteæ* 1–2½ lin. latæ, spicis suis longiores, vaginatæ. *Vagina* infima 1–1½ poll. longa. *Pedunculi* capillares: infimus saepe 4 poll. longus. *Spica mascula* semper pedunculata, cylindrica, 10 lin. longa, lineam lata, alba vel castanea nuda vel bracteata. *Spicæ fæmineæ* 3–8 lin. longæ, 2–3 lin. latæ, 5–8- vel 10-floræ (flos-

culis congestis, summis rarius abortivis, infimis 1-2 maseulis), omnes setaceo-pedunculatae, pendulæ, remotæ: infima fere semper radiealis. *Squamæ albæ*, demum plus minus castaneæ, nervo viridi: maseulæ latiores, obtusæ, nervo infra apieem evanescente: vel angustiores, laneeolatae, acutæ: fœmineæ laneeolatae vel ovato-acuminatae, euspidatae. *Perigynium* $1\frac{6}{10}-\frac{7}{10}$ lin. longum, $\frac{8}{10}-\frac{9}{10}$ lin. latum, rostellatum, apice sæpius excurvo, interdum recto; ore albido, integro; olivaceum, furfuraceo-asperulum. *Achenium* $1\frac{3}{10}$ lin. longum, $\frac{8}{10}$ lin. latum, ovale, acute triquetrum, castaneum, angulis pallidioribus, basi styli apieulatum.

A *C. digitali*, Willd., differt, foliis latioribus, glauis; spieis fœmineis, sæpe basi maseulis, densifloris, brevioribus, latioribus, pendulis; squamis fœmineis laneeolatis; perigyniis majoribus, apice attenuatis, rostellatis; -braetcis brevioribus.

The male florets (one or two) at the base of the female spikes have been overlooked by observers, and this character affords, with the general habit, I think, a sufficient distinction from its allies. They have not been drawn in the figure, but, though indistinct, the filaments, and at times the anthers, are easily discernible. I have found them frequently on all the spikes, but at times, though the scale is present, they are absent, having either fallen, or the scale is sterile.

92. *C. digitalis* (Willdenow); spicis 4 rarius 3-5 gracilis, terminali mascula cylindrica vel clavata pedunculata vel abbreviata subsessili nuda, reliquis fœminis interdum apice masculis remotis laxi-dissitifloris cylindricis linearibus, omnibus (inferioribusque longe) exserte pedunculatis pendulis, infima sæpe radicali; bracteis elongatis; stigmatibus 3; perigyniis triquetro-ovalibus obtusis, ore membranaceo integro sæpe obliquo, crebre leviter nervosis olivaceis furfuraceo-asperulis, squama ovata acuta vel cuspidata albida medio viridi trinervi longioribus vel (*infimis*) brevioribus.—*C. digitalis*, Willdenow, iv. 298; Muhl. 225?; Carey, Gray, Bot. 524; Sartwell, Eas. 94 (non Schw. et Tor. 324. t. 26. f. 1. quæ *C. gracillima* Schw.). *C. oligocarpa*, Muhl. 242 (non Schk.); Schw. et Tor. 344; Tor. Mon. 415. *C. Van-Vleckii*, Schw. An. tab. *C. oligocarpa*, var. Van-Vleckii, Dewey, Sill. x. 281. (TAB. XCVIII.)

HAB. In America septentrionali. New York to Pennsylvania and Ohio.

Culmus 6-15-poll., græcillimus, debilis, acutangulus, seaber, basi foliatus; pars spieas gerens 3-15 poll. longa. *Folia* 1-2 lin. lata, elongata, eulmo breviora, viridia, firma, demum nervis 2 lateralibus prominentibus notata. *Bracteæ* elongatae, vaginatae, spieis suis pedunculatisque sæpe duplo longiores: superiores, interdum omnes, eulmo longiores: inferiores nune 8-11 polliees longæ. *Vagina* infima $\frac{1}{2}$ rarius $1\frac{1}{2}$ poll. longa. *Pedunculi* capillares: infimus subinde 3-5 poll. longus. *Spica* *mascula* pollicaris, lineam lata, cylindrica vel clavata, basi attenuata, pedunculata: vel subsessilis, 4 lin. longa, $\frac{1}{2}$ lin. lata, alba vel castanea, nuda vel braetea sterili paulo ab ejus basi remota suffulta. *Spicæ fœmineæ* 4-12 lin. longæ, 1- $1\frac{1}{2}$ lin. latæ, 3-9- rarius 12-floræ, sæpe dissitifloræ (flores eontiguis vel alternatim dispositis, superioribus sæpe maseulis vel abortivis): inferiores nutantes vel pendulæ: infima sæpe radicalis. *Squamæ* albidae, nervo viridi: vel maseulæ castaneæ, laneeolatae, obtusæ, nervo infra apieem evanescente, vel acutæ: fœmineæ ovatae, acutæ, mutieæ, vel inferiores plus minus euspidatae. *Perigynium* $1\frac{3}{10}-\frac{5}{10}$ lin. longum, $\frac{7}{10}-\frac{8}{10}$ lin. latum, ovale, triquetrum, angulis subacutis, utrinque obtusum vel apice brevissimo excurvo, ore albido integro, recto vel obliquo, olivaceum, crebre nervosum, furfuraceo-asperulum. *Achenium* $1\frac{3}{10}$ lin. longum, plus $\frac{6}{10}$ vel $\frac{7}{10}$ lin. latum, triquetro-ovale, fuseum, basi styli apieulatum.

Mr. Carey states that this species is found from New England to Michigan. Elliott inserts it in his Sketch on the authority of Schweinitz, but the only specimen so named in his herbarium, Mr. Curtis tells me, is the *C. debilis* of Michaux from Dr. Torrey. It was long considered to be the *C. oligocarpa* of Schkuhr, until Dr. Gray verified it as the plant of Willdenow by an examination of the original specimen in Berlin. Kunth inserts it in his 'Cyperaceæ,' and I should have quoted him if he had not given as a synonym the species figured by Torrey in his and Schweinitz's Monograph (t. 26. fig. 1), which is *C. gracillima*, Schw.

93. *C. oligocarpa* (Schkuhr); spicis 4-5 rarius 3 erectis, terminali mascula elongata cylindrica pedunculata vel rarius abbreviata subsessili castanea, rclquis fœminis pallide viridibus oblongis 3-9-floris sublaxifloris remotis vel superioribus nunc approximatis, inferioribus breve exserte pedunculatis, infima subinde radicali, una vel altera sæpe basi composita; bracteis elongatis vaginisque glabris; stigmatibus 3; perigyniis oblongo-ovalibus vel obovatis apice sensim attenuatis rectis vel excursis, ore integro, obtuse triquetris creberrime striato-nervosis, nervis tenuibus quasi undulatis, pallide viridibus demum ferrugincis concoloribus, squama alba ovata acuta vel obtusa medio viridi trinervi longe valideque cuspidata longioribus, infimis (*cuspide*) sæpe duplo triplo brevioribus.—*C. oligocarpa*, Schk., Gray, Sill. xlvi. 14; Carey, (ed. 1) 555; Sartwell, Eas. n. 98 et 99 (non Dewey, x. 280, nec Schw. et Tor. 344, nec Tor. Mon. 415, quæ *C. digitalis*). *C. oligocarpa*, var. Sartwelliana, Dewey, v. 176. *C. Sartwelliana*, Gay (fide Dewey). *C. Hitchcockiana*, var., Tor. Mon. 413, et Dewey in Herb. Boott. (TAB. XCIX.)

Var. minor; culmo breviori gracillimo, spicis 3-4 panicifloris, perigyniis minoribus.—*C. oligocarpa*, Schk. v. v. v. f. 170; Willd. iv. 279.

HAB. In America Boreali, in sylvis. New York to Ohio.

Culmus 1- $1\frac{1}{2}$ -pedalis, græcillimus, firmus, apiee seabriuseulus, stricte eretus, basi foliatus, rudimentis foliorum vaginisque glabris purpureis teetus; pars spieas gerens 6-8 sæpe 12-15 poll. longa. *Folia* 1- $1\frac{1}{2}$ lin. lata, elongata, eulmo breviora. *Bracteæ* elongatae, vaginatae: superiores eulmo longiores. *Vaginae* 2-12 lin. longæ, glabrae. *Ligula* oblonga, obtusa, alba. *Pedunculus* infimus 1- $1\frac{1}{2}$ poll. longus. *Spica* *mascula* cylindrica, 7-15 lin. longa, lineam lata, plus minus longe pedunculata, nuda vel braeteata, castanea, ereta: vel rarius abbreviata, 4-5 lin. longa, obliqua. *Spicæ fœmineæ* 3-10 lin. longæ, 2-3 lin. latæ, sæpius omnes a se $1\frac{1}{2}$ -6 poll. remotæ: vel superiores interdum approximatae: omnes vel inferiores solum, exserte pedunculatae, una vel altera basi utrinque composita, ramulis 1-2 e latere perigynii egredientibus. *Squamæ* *masculæ* castaneæ, margine albo-hyalinæ, obtusæ vel acutæ, mutieæ, nervo infra apieem evanescente, vel in superioribus rarius in omnibus plus minus extra producto: infima sæpe in braeteam plus minus longam desinente: fœmineæ albæ, nervo viridi, obtusæ vel acutæ: inferiores præcipue vel omnes longe hispido-euspidatae. *Perigynium* $1\frac{8}{10}-2$ lin. longum, $\frac{8}{10}-\frac{9}{10}$ lin. latum. *Achenium* $1\frac{3}{10}$ lin. longum, $\frac{8}{10}$ lin. latum, subacute triquetrum, basi productum, basi styli apieulatum. *Stylus* brevis, supra basin inerassatus.

I have at different times received this species from Dewey and others, as *C. Hitchcockiana* and its variety *minor*, and I cannot refer to any description of it, since Willdenow's, anterior to that of Mr. Carey in Gray's Botany. The *C. oligocarpa*, Dewey (Sill. x. 280), is *C. digitalis*. His characters, "decumbent, culm, long

slender lax peduncles, and pistillate scale often slightly awned," alone apply to it. The fact is, that as a species it was not recognized until Dr. Gray saw it in Schkuhr's herbarium. Schkuhr's fig. n. 170 had proved a stumbling-block. His usual accuracy had made it presumptuous to doubt him, and the abrupt gracile rostrum to the obovate perigynium in his figure was like nothing that had been seen. Dr. Gray proved the inaccuracy of the figure; "quandoque bonus dormitat Homerus." The plant had, no doubt, been confounded with *C. Hitchcockiana* by Dewey. In Sill. v. 2 ser. 176, where he notices the specimens from Sartwell as a variety of *C. oligocarpa*, he gives no reference to any previous description of the typical form. I cannot see any propriety in making the larger and more perfect form a variety of the smaller form, and have therefore quoted Schkuhr's figure under the var. *minor*, between which and the larger form there is in fact an insensible transition. *C. oligocarpa* and *C. Hitchcockiana* form, I think, a subgroup distinct from that of *C. laxiflora* and its allies. The perigynium is more of a spongy texture, and the thick callous orifice and the incrassate style are peculiar to them. The nerves are tortuous, and more like folds of the external membrane than the usual prominent vascular cords.

94. *C. Hitchcockiana* (Dewey); spicis 4–5 rarius 3 erectis, terminali mascula cylindrica clongata pedunculata, vel saepe abbreviata subsessili pallida, reliquis foemineis pallide viridibus oblongis 2–5-floris (flosculis alternatim dispositis, summa plerumque abortiva), superioribus subapproximatis, infima remota breve exserte pedunculata; bracteis saepe omnibus culmo longioribus subtus basi vaginisque scabris; stigmatibus 3; perigyniis turgide ovalibus utrinque attenuatis obtuse triquetris apice excursis, ore integro, crenulato striato-nervosis pallide viridibus demum ferrugineis, squama alba ovata acuta vel obtusa medio viridi trinervi longe valideque cuspidata apice saepe ciliata longioribus vel infimis (*cuspide*) brevioribus vel subaequantibus.—*C. Hitchcockiana*, Dewey, Sill. x. 274; Carey, 524; Sartwell, Exs. n. 100. (TAB. C.)

HAB. In America Boreali, in sylvis. New England to Kentucky.

Culmus 1–1½-ped., gracilis, firmus, stricte erectus, apice angulis acutis scabris, basi foliatus, vaginisque pallide ferrugineis scabris tectus; pars spicas gerens 2–5, rarius 1.2 poll. longa. *Folia* 1–2½ lin. lata, culmo breviora, subtus basi vaginisque scabris. *Bracteæ*, saepe omnes, culmo longiores, vel infima eo brevior, vaginatae, basi plerumque subtus scabra. *Vaginæ* undique scabré: infima 4 lin. vel rarius 1½ poll. longa. *Pedunculus* infimus ½ vcl 1–2 poll. longus. *Spica mascula* cylindrica, 12–14 lin. longa, sublineam lata, pedunculata, squamis pallide stramineis, apice albo-hyalinis, ciliolatis, obtusis, nervo infra apicem evanescente, vel in superioribus acutis paullo extra producto: vel saepe abbreviata, 4–6 lin. longa, subsessilis, squamis albis, angustioribus, lanceolatis, acuminate, cuspidatis. *Spicæ foemineæ* 3–8 lin. longæ, 2 lin. latæ, 2–5-floræ, una vel altera florum apice abortiva, laxifloræ: superiores plerumque approximatæ: infima saepe remota, nunquam radicalis, omnes saepius breve vel infima plus minus longe exserte pedunculatae. *Squamæ foemineæ* ovatae, acutæ vel obtusæ, apice ciliolatae, plus minus longe valide cuspidatae, albæ, medio viridi trinervi. *Perigynium* 2–5 lin. longum, 1–1½ lin. latum, nervis (ut in *C. oligocarpa*) undulatis. *Achenium* (cum stipite ½ lin. longo) 1–2 lin. longum, ½ lin. latum, obtuse triquetrum, castaneum, basi styli obliqua apiculatum. *Stylus* brevis, supra basin incrassatus.

Aspectus omnino *C. oligocarpæ*. Differt culmo apice magis acute triquetro, scabro, basi vaginis pallide ferrugineis tecto; foliis saepe latioribus, basi subtus, bracteisque vaginis-

que omnibus scabris; spicis foemineis paucifloris, flosculis alternatim dispositis, summis 1–2 fere semper abortivis; squamis apice ciliolatis, plerumque minus longe cuspidatis; perigyniis majoribus, apice semper excurvis, basi magis productis.

95. *C. Willdenowii* (Schkuhr); spicis 2–5 remotis radicalibus inaequaliter plus minus longe pedunculatis pallidis erectis ovatis, simplicibus androgynis apice saepe inconspicue imbricato masculis basi flosculis foemineis 3–9 sublaxis instructis; stigmatibus 3; perigyniis ovalibus biconvexis acuminato-longe-rostratis rostro marginibus serratis, ore albo-hyalino integro oblique secto, glabris vel superne scabridis erectis membranaceis nervis 2 marginalibus, squama albida medio viridi nervata ad basin spicæ lanceolata longe acuminata saepe foliiformi plus minus brevioribus, ad apicem ejus interdum obtusa ciliolata longioribus.—*C. Willdenowii*, Schk. f. 145; Willd. iv. 211; Kunth, 480; Muhl. l. c. 230; Dewey, Sill. xi. 311; Schw. et Tor. 295; Tor. Mon. 404; Carey, l. c. 510; Sartwell, Exs. n. 7. (TAB. CI. et CII.)

HAB. In America septentrionali, in sylvis. New York, Sartwell, to New Orleans, Drummond, n. 430.

Cæspitosa. *Radix* fibrosa. *Culmus* brevissimus, basi rudimentis foliorum ferrugineis foliisque vaginantibus tectus. *Folia* 1–1½ lin. lata, plana, carinata, firma, pedunculis longiora. *Pedunculi* 2–4, monostachyi, inaequales, 1–8 poll. longi, debiles, triquetri, angulis acutis, albidis, scabris: infra spicam subito latioribus. *Spicæ* 5–7 lin. longæ, basi 2–3 lin. latæ, rarius compositæ: basi flosculis 3–9 laxè contiguis: pars staminifera 2–5½ lin. longa, ½ lin. lata. *Rachis* recta, angulis acutis. *Squamæ masculæ* arcte imbricatae, superne pallide stramineæ, medio viridi: apice marginibus late albo-hyalinæ, nervo infra apicem ciliatum evanescente. *Squamæ foemineæ* virides, margine albo-hyalinæ; inferiores saepe 1–3, foliiformes, bracteas simulantes, spica longiores: infima interdum 1½ ctiam 4 poll. longa: superiores lanceolatae, acutæ, vel obtusissimæ, nervo infra apicem evanescente. *Perigynium* (cum stipite ¼ lin. longo, rostro 1–1½ lin. longo) 2–3 lin. longum, ½ lin. latum, achenium arcte tegens: interdum "racheolâ viridi, squamaceâ, achenium æquante" (Tor.): vel axi exsertâ spicam masculam vel androgynam ferente instructum (t. 102. u. et v.). *Achenium* 1–2 lin. longum, ½ lin. latum, ovale, obtusissime subtrigonum, angulis inconspicuis, faciebus convexis, fuscum, punctulatum, basi margine tumida insigni pallidiori einctum.

I have not chanced to detect the racheola within the perigynium, noticed by Dr. Torrey, and I infer, as in other species in which I have observed it, that it is not constant. Muhlenberg alludes to a variety with a linear subdistinct male spike, and three or four alternate female flowers. Elliott remarks, that the only specimen he had of this species belonged to this variety. Mr. Curtis informs me that the specimen in Herb. Elliott, received from Pennsylvania, is *C. Steudelii*, Kunth, and I infer therefore that Muhlenberg's variety belongs to that species.

The *C. Willdenowii*, Dewey, Sill. ix. 258, "perigyniis squama duplo vix longioribus," Torrey refers to a variety of *C. polytrichoides*, to which Dewey says it is "closely related." I am not aware of the limits of this species, and have given such as the specimens in my herbarium warrant. Torrey in his Monograph gives a wider range; but at the date of that publication this species was confounded with *C. Steudelii* and *C. Backii*.

The male apex of the spike on the shorter peduncles is often inconspicuous, not reaching to the extremity of the upper perigynium. In the longer ones it is more developed, and is persistent after the fall of the mature perigynia. The axis of the female portion is straight, continuous with that of the male apex, and there can be no question as to the spike being simple; and analogy would

lead to the inference that the oblique axis, with the more remote female flowers in *C. Steudelii* and *C. phyllostachys*, is equally that of a simple androgynous spike, and not a compound one, as Kunth supposed, with a distinct male and two or more one-flowered female spiculae.

In Tab. CII. the lower perigynium is shown to have an exserted axis, bearing a solitary male or an androgynous spike. The variation in the length of the lower female scale is also represented.

96. *C. Steudelii* (Kunth); spicis 1-3 remotis radicalibus inaequaliter longe setaceo-pedunculatis pallidis erectis vel nutantibus, simplicibus androgynis apice tenui saepe oblique masculis, basi flosculis foemineis 1-4 alternis contiguis instructis; stigmatibus 3; perigyniis orbiculato-pyriformibus longe triquetro-rostratis, rostro marginibus serratis, ore albo-hyalino integro ciliato demum ferrugineo, glabris viridibus membranaceis, nervis 2-3 e marginibus rostri decurrentibus, squama viridi nervata margine albida saepius longe foliacea latioribus plus minus brevioribus, vel summâ ovatâ longioribus.—*C. Steudelii*, Kunth, *Cyp.* 480; *Carey*, 510; *Kunze*, l. c. 16. t. 3. f. 2; *Dewey*, *Sill.* xlix. 46; *Sartwell*, *Exs.* n. 8. *C. Jamesii*, *Schw. An. tab.* (*fide Carey*). *C. Willdenowii*, var., *Muhl.*, *Elliott*, ii. 527. (TAB. CIII.)

HAB. In America septentrionali, in sylvis. New York to Ohio.

Cæspitosa. *Radix* fibrosa. *Culm* brevis, rudimentis foliorum purpureo-ferrugineis foliisque vaginantibus teetus. *Folia* 1 lin. lata, plana, mollia, graminea, longissima, saepe bipedalia. *Pedunculi* 1-3, monostachyi, inaequales, 1-10 poll. longi, radieales, debiles, triquetri, breviores erecti; vel longiores deeumbentes, angulis albidis, acutis, scabris, infra spieam subito latioribus. *Spica* 2-7 lin. longa, basi floseulis 1-3 rarius 4, alternis: pars staminifera linearis saepius 4-6 lin. longa, $\frac{3}{10}$ lin. lata, recta vel obliqua, saepe quasi breve pedunculata. *Rachis* angulata, obliqua. *Squamæ masculæ* saepe 12, parvae, obtusæ, pallide virides, zona ferruginea infra apieem album latum ciliatum notatae. *Squamæ foemineæ* saepe omnes foliaeæ, bracteas simulantes: infima interdum 4 poll. longa: summa quandoque ovata, acuta, perigynio brevior. *Perigynium* (cum stipite $\frac{3}{10}$ lin. longo, rostro $1\frac{3}{10}$ lin. longo) 3 lin. longum, $\frac{9}{10}$ lin. latum, demum flavidum, achenium arcte tegens. *Achenium* $1\frac{1}{10}$ lin. longum, $\frac{9}{10}$ lin. latum, obtusissime trigonum, obtusum, apiee depressione circulari indentatum, basi margine tumida cinctum, pallidum, punetulatum. *Stamina* 2. *Stylus* insertus, basi triquetra inerassata. *Stigmata* 3 vel interdum 2?, longa.

Kunth, who first distinguished this species, which had been previously confounded with *C. Willdenowii*, says of it, "Utriculis planisculo-convexis, squamam ovatam aristatam superantibus; achenium rudimento styli terminatum." His specimens must have been immature. It is singular that he should have placed it and *C. phyllostachys* in different sections, especially as he was inclined to consider the last as having a distinct male spike and two or three one-flowered female ones, a character equally applicable to *C. Steudelii*. He considers both to be allied to *C. depauperata*, Good., "cujus (*C. phyllostachys*) (he says) nonmisi forma?" Tuckerman has the same idea, and expresses some surprise that Kunze objects to this affinity on the part of *C. Steudelii*. If habit be an element of affinity, the simple androgynous radical spikes, the large foliaceous scales and absence of bracts essentially distinguish the *Phyllostachyæ*.

C. depauperata affords a good evidence of the difficulty attending the notions of the affinities of *Carices*. Kunth associates it with *C. phyllostachys*, questioning if it be anything more than a variety. Drejer places it "ultra terminos" of his *Lamprochlaenæ*, the type of

which is *C. supina*. Tuckerman includes it in his *Careyanæ*, and joins *C. plantaginea* and *C. oligocarpa* with it in the same group. To me, it seems to belong to the *Sylvaticæ*, near *C. longirostris*, Torrey; the hyaline orifice of its long slender rostrum contrasting remarkably with *C. oligocarpa*, which again equally contrasts with *C. plantaginea*. Tuckerman considers *C. Hitchcockiana* a variety of *C. oligocarpa*, the general habit or aspect of which variety or species certainly at first glance closely resembles that of *C. depauperata*.

97. *C. Backii* (Boott); spicis 1-4 remotis radicalibus inaequaliter plus minus longe pedunculatis pallidis erectis, androgynis apice inconspicue masculis, basi flosculis foemineis 2-4 alternatim contiguis instructis; stigmatibus 3 brevibus, stylo exerto; perigyniis oblongo-ovalibus conico-rostratis superne vacuis, ore albo-hyalino integro vel oblique secto glabris vel rarius superne marginibus serrulatis, nervis 2 marginalibus, squama viridi nervata lanceolata foliiformi amplectente angustioribus saepe multum brevioribus vel summâ latioribus longioribusque.—*C. Backii*, Boott, *Fl. Bor. Am.* ii. 210. t. 209; *Carey*, l. c. 510; *Dewey*, *Sill.* xlix. 46; *Sartwell*, *Exs.* n. 9. (TAB. CIV.)

HAB. In America septentrionali, in collibus saxosis. Carlton House, Richardson. Rocky Mountains, Drummond. New York, Vasey, Wood. Massachusetts, Whitney.

Cæspitosa. *Radix* fibrosa. *Culm* brevissimus, rudimentis vaginisque foliorum ferrugineis teetus. *Folia* 1-2 lin. lata, firma, 6-12 poll. longa. *Pedunculi* 1-4, inaequales, monostachyi, radieales, graciles, $\frac{1}{2}$ -8 poll. longi, saepe omnes abbreviati, semper foliis breviores, angulis albidis acutis seabrius-eulis infra spieam latioribus subalatis. *Spica* primo squamis erectis fere ocellata, pauciflora rarius composita: pars staminifera ineonspieua, $1\frac{1}{2}$ lin. longa, $\frac{3}{10}$ lin. lata, subtriflora, vix longitudinem dimidiam perigynii superioris attingens. *Squamæ masculæ* oblongæ, tubulosæ vel amplectentes, virides, zona ferruginea infra apieem albo-hyalinum angustum notatae. *Squamæ foemineæ* omnes foliiformes, braeteas simulantes, infima plerumque $\frac{1}{2}$ - $1\frac{1}{2}$ poll. longa, interdum 3-5-pollicaris, 1-2 lin. lata, vel summa ovata euspidata perigynium aequans vel eo brevior. *Perigynium* $2\frac{1}{2}$ -3 lin. longum, $1-1\frac{1}{10}$ lin. latum, sensim in rostrum late conicum attenuatum; ore hyalino, demum ferrugineo; superne vacuum; rostro rarius ad margines serrulato; saepius omnino glabrum, membranaceum, achenium laxiuseule vestiens. *Achenium* $1\frac{2}{10}-1\frac{4}{10}$ lin. longum, $\frac{8}{10}$ lin. latum, orbiculato-subtrigonum, basi productum, faecibus convexis, pallidum, punetulatum, basi stylis aequali deedita. *Stylus* exsertus, stigmataque 3, brevia, granulata, brunnea.

In uno specimine, floseulis foemineis 4, infimus 7 lin. remotus, squamâ 5 pollices longâ, suffultus. In altero, perigynium infimum (ut in *C. Willdenowii*) proliferum.

Ab affinibus differt, perigynio superne vaeuo, rostro breviori, basi latiori; stylo demum exerto, stigmatibusque brevibus granulatis; floseulis maseulis semper paucioribus, ineonspieuis, squamisque tubulosis?, apiee oblique fissis.

98. *C. Geyeri* (Boott); spica simplici androgyna apice cylindrica mascula pallida vel demum ferruginea, basi flosculis foemineis 1-5 alternis approximatis rachi recta; stigmatibus 3; perigyniis ovali-trigonis basi productis brevissime rostellatis, ore albo-hyalino integro ciliato viridibus membranaceis glabris, nervis 2 prominentibus, squama late ovata obtusa vel acuta albida medio viridi nervata amplectente cuspidata vel foliacea plus minus brevioribus.—*C. Geyeri*, Boott, *Lin. Trans.* xx. 118; *Kunze*, l. c. 186. t. 47. (TAB. CV.)

HAB. In America septentrionali et meridionali. In declivitatibus aridis Montium Saxosorum, Geyer, n. 332. Near the summit of the Cordilleras, California, Dr. C. C. Parry (Herb. Torrey). Buffalo Ranch, Sierra Nevada, California, Thurber, n. 13 (Herb. Gray).

Cæspitosa. *Radix* repens. *Culmus* gracilis, firmus, triquetter, lœvis vel scaber, 6–10-poll. vel demum 2-pedalis, basi reliquias fibratis vaginisque foliorum ferrugineis tectus; superne nudus: in uno specimine folio brevi longe vaginante et basi spicæ 5 poll. remoto munitus. *Folia* $\frac{1}{2}$ –1 lin. lata, culmo breviora vel longiora, firma, carinata, marginibus carinaque scaberrima. *Spica* 10–15 lin. longa, recta: pars staminifera 5–10 lin. longa, $\frac{1}{2}$ lin. lata: basi flosculis foemineis 1–5 alternis instructa. *Squamæ masculæ* oblongæ, obtusissimæ, albidae, ciliatae, medio viridi, demum ferrugineæ, concolores: foemineæ similes, breve euspidatae, vel inferiores foliacæ, 10–12 lin. longæ; spicam æquantes: summa interdum mutica, nervo ad apicem vel paulo infra attingente. *Perigynium* $2\frac{7}{10}$ –3 lin. longum, 1– $1\frac{4}{10}$ lin. latum. *Achenium* perigynio arcte tectum, $2\frac{1}{10}$ lin. longum, lineam latum, basi productum, basi styli in-crassata decidua.

C. phyllostachys maxime affinis, quæ tamen differt squamis foemineis longissime foliaceis, masculis inferioribus interdum cuspidatis; perigyniis longius rostratis, nervatis, superne scabriusculis; rachi angulata, flexuosa; culmo inferne foliis vaginantibus pluribus instructo.

In Geyer's specimens the culm is rough, with only one or two female flowers and short cuspidate female scales, and these, but especially the male scales, are ferruginous. In one specimen the spike is wholly male. In Dr. Price's and Thurber's specimens the culm is smooth, the female flowers three or five, the female scales foliaceous and white, with a green-nerved centre.

99. *C. phyllostachys* (Meyer); spica simplici androgyna apice tenui cylindrica mascula basi flosculis foemineis 3 alternis, infima subremota rachi flexuosa; stigmatibus 3; perigyniis ovato-trigonis rostellatis, ore albo-hyalino integro ciliato, glabris superne ad marginis scabriusculis nervatis viridibus, squama longissime foliacea basi margine membranacea albida ciliata medio viridi nervata latioribus multoties brevioribus.—*C. phyllostachys*, Meyer, Enum. Pl. Cœreas. p. 30; Flora Ross. Ledebour, 269; Kunth, 478. (TAB. CVI.)

HAB. In regione Caucasicæ.

Radix fibrosa. *Culmus* 1– $1\frac{1}{2}$ -ped., gracillimus, acute triquetter, angulis albidis scabriusculis basi rudimentis vaginisque foliorum ferrugineis tectus, sursum foliis vaginantibus munitus, superne nudus. *Folia* $\frac{1}{2}$ –1 lin. lata, culmum æquantia, eariata, marginibus demum revolutis. *Ligula* truncata, ferruginea. *Spica* 9–12 lin. longa, flosculis foemineis 2 superioribus contiguis: infimo 4–5 lin. remoto: pars staminifera 4 lin. longa, $\frac{4}{10}$ lin. lata, crecta. *Rachis* flexuosa, angulis acutis. *Squamæ masculæ* imbricatae, albidæ, pallide ferrugineo-tinctæ, nervo viridi infra apicem evanescente obtuse: inferiores lanceolatae, laxæ: infima in uno specimine cuspidata. *Squamæ foemineæ* omnes foliacea, bracteas simulantes, spica longiores: infima 3 $\frac{1}{2}$ –5 poll. longa, $\frac{3}{10}$ lin. lata, omnes basi marginibus albidis pallide ferrugineo-tinctis, medio viridi nervatae. *Perigynium* $2\frac{7}{10}$ –3 lin. longum, 1 $\frac{4}{10}$ lin. latum. *Achenium* perigynio conforme, trigonum, punctulatum, basi styli conico-incrassata.

This species differs from all its allies in its nerved perigynium.

100. *C. concinna* (Brown); spicis 3–4 rarius 5 parvis paucifloris plerumque confertis vel approximatis, termi-

nali mascula tenui oblonga subsessili, rarius apice vel omnino foeminea, reliquis foemincis ovalibus densifloris, inferioribus inserte vel exserte brevi-pedunculatis erectis, infima interdum subremota vel radicali angusta laxiflora longe exserta pedunculata saepe basi composita; vaginis brevibus cuspidatis vel infima longiori subulato-foliacea; stigmatibus 3 lœvibus; perigyniis triquetro-ovalibus utrinque attenuatis, vel obovatis rostellatis, ore emarginato ferrugineo, pallide viridibus strigoso-hirtis, nervis 2 marginalibus, squama late ovata obtusa purpurea margine late albo-hyalina ciliata angustioribus subduplo longioribus.—*C. concinna*, Brown, Frank. Nar. App. 763; Kunth, Cyp. 444; Fl. Bor. Am. ii. 223; Schw. et Tor. 330; Dewey, Sill. xi. 152. *C. ornithopoda*, Torr. Mon. 412 (non Willd.). (TAB. CVII.)

HAB. In America Boreali. Wooded and barren grounds. Arctic America, Richardson. Rocky Mountains, Drummond.

Stolonifera. *Culmus* 4–9-poll., filiformis, debilis, erectus vel nutans, apice scaber, basi foliatus, rudimentis que foliorum purpureis tectus; pars spicas gerens 4–12 lin. longa, rarius ad basin porrecta. *Folia* 1– $1\frac{1}{2}$ lin. lata, culmo breviora, plana. *Bractæ* vaginatae: superiores brevi-cuspidiformes, vel infima subfoliacea, pedunculo brevior. *Vaginæ* 1–2, infima nunc 6 lin. longa. *Pedunculi* scabri, 1–4 vel infimus 18 lin. longi. *Spicæ* plerumque confertæ, abbreviatæ: terminalis mascula, vel rarius apice foemina, 1–4 lin. longa, $\frac{1}{2}$ lin. lata: interdum omnino foeminea: foeminae 2–3 lin. longæ, 1– $1\frac{1}{2}$ lin. latae, omnes contiguae, vel infima paulo remota: vel rarius subradicalis, angusta, laxiflora, interdum basi composita: in uno specimine spica media geminata. *Squamæ* conformes, purpureæ, margine albo-hyalinæ, ciliatae, obtusæ, muticae, rarius cæ spicæ radicalis acutæ, ctiam cuspidatae, perigynium æquantes. *Perigynium* $1\frac{1}{10}$ – $3\frac{3}{10}$ lin. longum, $\frac{5}{10}$ – $\frac{6}{10}$ lin. latum. *Achenium* stipitatum, $\frac{8}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, ovali-triquetrum, ferrugineum, punctulatum, basi styli crassiore sensim apiculatum. *Stigmata* brevia, lœvia.

A *C. ornithopoda*, Willd., differt spicis brevioribus, densifloris; perigyniis strigoso-hirtis; squamis ciliatis.

Torrey, in his Monograph, remarks that he follows Dewey in referring this species to *C. ornithopoda*, but he gives no reference; and I have quoted from Silliman's Journal the only allusion that I can find of Dewey to the species under the name originally given to it by Mr. Brown. It has not been found in the States.

101. *C. Spachiana* (Boott); spicis 4–9 oblongis vel cylindraceis pedunculatis remotis, terminali mascula vel basi vel apice et basi mascula pallida, reliquis foemineis apice masculis singulis vel mediis geminatis inæqualibus exserta pedunculatis nutantibus pallide ferrugincis; bracteis culmo longioribus; stigmatibus 3; perigyniis ellipticis longe rostratis, ore emarginato hyalino, membranaceis ventricosis leviter nervatis superne scabriusculis marginibus serratis ferrugineo-punctatis, squama lanceolata acuta vel mucronata pallida decolori latioribus longioribusque. (TAB. CVIII.)

HAB. Prope Macao, China, M. Callery (Herb. Mus. Paris.!).

Culmus 1–2-ped., triquetter, lœvis, validus vel gracilis, rigidus, basi foliatus; pars spicas gerens 5–15 poll. longa. *Folia* 1– $1\frac{1}{2}$ lin. lata, carinata, rigida. *Bractæ* vaginatae, culmo longiores. *Vaginæ* inferiores, $\frac{1}{2}$ –1 poll. longæ. *Pedunculi* filiformes, scabri: inferiores 2–4 poll. longi: geminati, inæquales. *Spica*

terminalis 1-1½ poll. longa, pedunculata. *Spicæ fœmineæ* ½-1½ poll. longæ, 3-4 lin. latæ, omnes singulæ, vel una vel altera e mediis geminata; apice masculæ: inferiores longe exserte pedunculatæ, nutantes. *Squamæ* conformes, pallidæ. *Perigynium* 2 $\frac{6}{10}$ -3 lin. longum, $\frac{8}{10}$ lin. latum; rostro gracili, elongato, denum superne albo-hyalino; ore facile rupto, integro, obliquo, demum emarginato vel fisso. *Achenium* (cum stipite $\frac{2}{10}$ lin. longo) $\frac{1}{10}$ lin. longum, $\frac{6}{10}$ lin. latum, ovali-triquetrum, fuscum, angulis pallidis, impresso-punctulatum, basi styli æquali apiculatum.

Affinis *C. Cherokeensi*, Schw., quæ spicis masculis 2-3 vel terminali basi fœminea; fœmineis pallidis, sæpe ternatis; perigyniis minoribus, rostro breviori, obsolete nervatis, glabrioribus; foliis latioribus, minus rigidis, gaudet.

I am indebted for the knowledge of this species to my kind friend, M. Spach, and have dedicated it to him. It was found near Macao by M. Calléry, a French missionary. It is very closely allied to *C. Cherokeensis*.

102. *C. rara* (Boott); spica simplici androgyna apice subdimidiatim mascula oblongo-cylindracea olivaceo-ferruginea sæpe nuda; stigmatibus 3; perigyniis ovatis vel lanceolatis sensim acuminato-rostellatis, ore integro obliquo, valide nervatis oblique divergentibus olivaceis, squama ovata obtusissima vel subacuta ferruginea nervo viridi infra apicem evanescente vcl extra producto ciliolata infima subinde breve cuspidata longioribus.—*C. rara*, Boott, Lin. Trans. xx. 139. (TAB. CIX.)

HAB. In montibus subtropicis Zeylaniæ, Gardner; Khasiæ et Bhotan, Griffith.

Culmus 12-20-poll., filiformis, laevis, nudus, basi foliatus. *Folia* filiformia, culmo breviora. *Spica* 8-11 lin. longa, apice ½ lin. basi 2 lin. lata. *Squamæ* omnes conformes, ferrugineæ: infima subinde breve cuspidata. *Perigynium* 1 $\frac{2}{10}$ - $\frac{4}{10}$ lin. longum, $\frac{5}{10}$ - $\frac{7}{10}$ lin. latum. *Achenium* $\frac{6}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, ovali-triquetrum, stipitatum. *Stigmata* 3, longa.

103. *C. capillacea* (Boott); spica simplici androgyna apice mascula abbreviata ovata ferruginea plerumque nuda; stigmatibus 3; perigyniis ovatis vel oblongis rostellatis, ore integro, plano-trigonis stipitatis divaricatis vel reflexis leviter nervatis punctis resinosis obsitis, squama ovata obtusa ferruginea medio pallida trinervi decidua infima subinde cuspidata longioribus. (TAB. CX.)

HAB. In Himalaya orientali temperata (uliginosis), alt. 10-12,000 ped., ad Sikkim, J. D. Hooker; Bhotan, Griffith.

Cæspitosa. *Culmus* 3-10-poll., capillaceus, superne scaber. *Folia* capillacea, culmo breviora vel subæquantia. *Spica* 3-4 lin. longa, basi 2 lin. lata; pars tertia vel dimidia suprema mascula. *Squamæ* omnes conformes, obtuse: infima rarius cuspidata, cuspide spica breviore vel æquante. *Perigynium* $\frac{6}{10}$ -1 lin. longum, $\frac{4}{10}$ - $\frac{5}{10}$ lin. latum, postice planum, obtuse trigonum, stipitatum, horizontaliter divergens vel reflexum. *Achenium* $\frac{6}{10}$ lin. longum, $\frac{3}{10}$ lin. latum, oblongo-ovale, triquetrum. *Stigmata* 3, brevia.

A *C. rara* differt, culmo foliisque brevioribus, capillaceis; spica abbreviata, ovata, ferruginea; perigyniis minoribus, resinoso-punctatis, reflexis; squamis fœmineis deciduis.

104. *C. fusiformis* (Nees); spicis 6 cylindricis laxis remotis gracilibus, terminali mascula pallide castanea, reliquis fœmineis olivaceis exserte pedunculatis bracteatis, inferioribus dissitifloris; stigmatibus 3; perigyniis fusiformibus triquetris longe attenuato-rostratis rostro su-

perne scarioso marginibusque scabris, ore albo-hyalino obliquo demum bilobo, nervatis stipitatis pallide ferrugineis, squama ovato-lancolata obtusa hispido-aristata castanea margine superne albo-hyalina duplo longioribus.—*C. fusiformis*, Nees, Wight, Contr. p. 128; Kunth, 471; Drejer, Symb. 24. t. 11. (TAB. CXI.)

HAB. In Himalaya temperata ad Kumaon, alt. 6-7000 ped., Royle, n. 88. Sikkim, alt. 10-12,000 ped., Hooker.

Culmus 1½-ped., laevis, e basi foliatus; pars spicas gerens 9-12-poll. *Folia* 3 lin. lata, plana, mollia, graminea, culmo breviora. *Bractæ* foliaceæ, vaginatæ: superiores culmum æquantes. *Vagina* infima 1-2 poll. longa. *Pedunculi* filiformes, scabri: infimus 3-4 poll. longus. *Spica* mascula 12-15 lin. longa, sublineam lata: rarius altera "minor et quasi rudimentaria" (Drejer). *Spicæ fœmineæ* 1-2½ poll. longæ, 1½-2 lin. latæ: suprema subinde masculam superante, laxiflora: inferiores flosculis remotiusculis alternatim dispositis. *Squamæ* pallide castaneæ, superne ad margines late albo-hyalinæ: masculæ muticæ: fœmineæ aristatae: aristâ in inferioribus perigynium subæquante. *Perigynium* 3½-4 lin. longum, $\frac{8}{10}$ lin. latum: rostrum apice scariosum serratumque: os integrum, obliquum, demum fissum. *Achenium* stipitatum, 1 $\frac{7}{10}$ lin. longum, $\frac{7}{10}$ lin. latum, oblongo-triquetrum, faciebus inferne concaviusculis: basi styli persistente apiculatum, flavidum.

Ad *C. sylvaticam* prope accedit. Differt spicis laxifloris; perigyniis longioribus; ore hyalino, integro, demum bilobo.

Var. β ; spicis pluribus, maseulis 1-2, fœmineis elongatis 4-pollicaribus; squamis longioribus; foliis latioribus, 4-5 lin. latis; bracteis culmo longioribus.—Hab. Lachen, Hooker.

I have only seen one male spike in *C. fusiformis*. The mouth of the perigynium is easily ruptured, even by the protrusion of the stigmata. I believe it is originally entire-oblique, becoming eventually ruptured and two-lobed, the lobes obtuse, by which it is distinguished from *C. sylvatica*. The specimens brought by Dr. Hooker from Lachen are not mature: I refer them to *C. fusiformis*, from the aristate scales, which distinguish them from *C. finitima*, but the greater number of the spikes (6-11) and the elongate scales, the more profuse and more crowded florets, are deviations from the typical form.

105. *C. finitima* (Boott); spicis 6-8 rarius 12 cylindricis sublaxis linearibus pallide castaneis, masculis 1-2 erectis, reliquis fœmineis elongatis exserte pedunculatis bracteatis, inferioribus nutantibus basi attenuatis; stigmatibus 3; perigyniis fusiformibus triquetris longe rostratis, rostro superne scarioso, ore albo-hyalino obliquo demum bilobo, glabris nervis 2 marginalibus, squama obovata obtusa vel lanceolata acuta mutica pallide ferruginea margine albo-hyalina nervo viridi longioribus. (TAB. CXII.)

HAB. In Himalaya orientali temperata, ad Sikkim, alt. 9-11,000 ped., J. D. Hooker, in sylvis.

Culmus 1-2-ped., triquierter, validus, laevis, superne scabriusculus, e basi foliatus, inferne vaginis rubro-purpleis tectus; pars spicas gerens subpedalis. *Folia* 3-4 lin. lata, plana, graminea, firma, culmo breviora. *Bractæ* vaginatæ, foliaceæ, culmo longiores vel breviores. *Vagina* infima 2-2½ poll. longa. *Pedunculus* infimus 4-5 poll. longus, filiformis, superne scaber. *Spica* mascula terminalis, 12-15 lin. longa, 1-1½ lin. lata; rarius altera brevis sessilis ad ejus basin sita. *Spicæ fœmineæ* 1-3 poll. longæ, 1½ lin. latæ, alternatim approximatæ: superiores sæpe masculam superantes, erectæ: inferiores longe exserte pedunculatæ, nutantes, basi attenuato-laxifloræ: infima

subinde basi composita. *Squamæ* omnes muticæ, pallide ferrugineæ, superne margine albo-hyalinæ: masculæ obtusæ: fœmineæ obtusæ vel lanceolatae, aeutæ: nervo infra apicem late hyalinum evanescente. *Perigynium* $2\frac{6}{10}$ lin. longum, $\frac{6}{10}$ lin. latum, glabrum, enervium, nisi nervis 2 marginalibus; rostrum apicem albo-hyalinum, demum constrictum; ore hyalino, obliquo, bilobo. *Achenium* stipitatum, $1\frac{1}{9}$ lin. longum, $\frac{4}{10}$ lin. latum, oblongo-obovatum, triquetrum, basi styli apiculatum, faciebus basi concaviusculis.

A *C. fusiformi* differt, spicis pluribus, angustioribus, sub-econfertifloris; squamis muticis; perigyniis minoribus, glabris, enerviis; foliis subrigidis.

The habit of this species allies it to the var. β of *C. fusiformis*, but the obtuse awnless squamæ and the smooth perigynia distinguish it. The scarious apex of the rostrum becomes contracted in the mature perigynium, and the hyaline bilobed orifice in both species is characteristic.

106. *C. ligulata* (Nees); spicis 5–7 cylindricis stricte erectis, mascula 1 rarius 2 sessilibus castaneis, fœmineis 4–6 griseis, superioribus contiguis, inferioribus vel omnibus alternis subremotis exserte pedunculatis subinde apice masculis bracteatis; bracteis foliis conformibus rigidis strictis culmo longioribus; vaginis scabris; stigmatibus 3; perigyniis ovalibus triquetris rostratis bifidis rectis undique scaberrimis, nervis 2 marginalibus, squama ovata subacuta hispido-aristata laticribus longioribusque.—*C. ligulata*, Nees, Wight, Contr. 127; Kunth, 516. (TAB. CXIII.)

HAB. In Himalaya subtropica et temperata. Kumaon, alt. 7000 ped., Royle, n. 115. Nipal, alt. 5–6000 ped., Hooker; et in montibus Khasiae, alt. 4–5000 ped., Hooker et Thomson.

Culmus 2–2½-ped., triquetus, rigidus, piloso-scaber, usque ad apicem foliis bracteisq; vaginantibus fere omnino clausus; pars spicas gerens 3–10 poll. longa. *Folia* 3–4 lin. lata, plana, glauca, apice attenuato-acuta, firma, stricta, deorsum breviora: superiora culmo longiora. *Bracteæ* foliis conformes, culmo longiores. *Vaginæ* piloso-scabrae, intus apice ferrugineæ. *Ligula* ferruginea, superne ad faciem bracteæ alligata, apice libera. *Pedunculi* inferiores 2 poll. longi, triquetri, scabri, graeiles. *Spica mascula* 9–12 lin. longa, sublincam lata, sessilis, apieem spicæ fœmineæ superioris subinde vix attingens: vel alterâ quandoque apice fœmineâ, breviori, ad basin aucta. *Spicæ fœmineæ* 1–1½ poll. longæ, 3 lin. latæ: superiores eontiguæ, inserte vcl omnes alternae exserte pedunculatae, interdum apice maseulæ. *Squamæ* omnes eonformes, vel masculæ submuticæ, apice ciliatae. *Perigynium* $1\frac{8}{10}$ lin. longum, $\frac{8}{10}$ lin. latum. *Achenium* $1\frac{1}{10}$ – $1\frac{2}{10}$ lin. longum, $\frac{6}{10}$ – $\frac{7}{10}$ lin. latum, ovali-triquetrum, breve stipitatum, basi styli decidua incrassata.

Nees remarks of this species that it is "a *Caricibus* omnibus distincta vaginis culmum totum vestientibus." This remarkable character however becomes modified as the culm is more and more developed, leaving spaces between the sheathing leaves. Its affinity is with *C. hebeearpa*, Meyer, which Nees apparently never saw, though one of Wallich's plants, but still more closely allied in habit with *C. Maubertiana*, B.

107. *C. Maubertiana* (Boott); spicis 7 cylindricis linearibus stricte erectis contiguis ferrugineis, terminali mascula vel apice fœminea pedunculata, fœmineis exserte pedunculatis bracteatis; bracteis foliis conformibus rigidis strictis vaginatis culmo longioribus; stigmatibus 3; perigyniis late ovalibus triquetris rostratis, rostro saepe excurvo, bifidis undique scaberrimis, nervis 2 marginali-

bus, squama ovata subacuta vel obtusa breve hispido-aristata vel mutica ferruginea longioribus. (TAB. CXIV.)

HAB. Touran, Cochin-China, Gaudichaud. (Herb. Mus. Paris.)

Culmus sesquipedalis, triquetus, validus, rigidus, omnino nisi inferne foliis vaginantibus clausus; pars spicas gerens 3 poll. longa. *Folia* 2 lin. lata, plana, sensim apice attenuata, rigida, stricta: inferiora brevia, remota: superiora 9 poll. longa, contigua, quadrifaria. *Vaginæ* glabrae, culmum omnino tegentes, inter se thccatae, basis superioris in inferioris apice reepta. *Bracteæ* foliis conformes, culmo longiores. *Vaginæ foliorum* fusco-purpuræ. *Spica mascula* pollicaris, 1 lin. lata, subinde apice fœminea. *Spicæ fœmineæ* 12–15 lin. longæ, 1½ lin. latæ. *Squamæ* omnes conformes, plus minus apice ciliatae, ferrugineæ, maseulis saepc conspersæ. *Perigynium* $1\frac{6}{10}$ lin. longum, $\frac{8}{10}$ lin. latum. *Achenium* 1 lin. longum, $\frac{7}{10}$ lin. latum, perigynio conforme, basi styli incrassata decidua.

C. ligulata arcte affinis, sed omnibus partibus minor; spicis foliisq; angustioribus, vaginis glabris; perigyniis minoribus, rostro excurvo.

I am indebted to M. Spach for the knowledge of this species, and have named it after M. Maubert, to whom I am under great obligations for the labour bestowed on the figures of this Work. The specimens in the Herbarium in Paris are the only ones I have seen gathered by M. Gaudichaud in Cochin-China.

108. *C. Prescottiana* (Boott); spicis 6–10 cylindricis elongatis densifloris contiguis sessilibus stramineis concoloribus, masculis 1–2 gracilibus, reliquis fœmineis, inferioribus longe foliaceo-bracteatis evaginatis basi attenuatis; stigmatibus 2; perigyniis late ovalibus subturgidis rostellatis emarginato-bidentatis nervatis divergentibus stramineis saepe ferrugineo-punctatis, squama ovata obtusa validc hispido-cuspidata purpurea medio pallida trinervi laticribus longioribusque.—*C. Prescottiana*, Boott, Lin. Trans. xx. 135. (TAB. CXV.)

HAB. In ins. Hawaii. "In Napalia?" Herb. Wallich, n. 3386. Ins. Hawaii, "in the forest above the saw-mill," Captain Wilkes (Herb. Gray).

Culmus 2–3-ped., triquetus, validus, rigidus, laevis, inter spicas scaber, basi foliis vestimentibus tectus; pars spicas gerens 6–9 poll. longa. *Folia* 4 lin. lata, plana, carinata, rigida, culmum subaequantia. *Bracteæ* evaginate: inferiorcs culmum longe superantes. *Spicæ masculæ* 1–2½ poll. longæ, 1 lin. latæ, sessiles. *Spicæ fœmineæ* 2½–4 poll. longæ, 2½ lin. latæ, omnes contiguæ, eretæ vel cernuæ. *Squamæ* omnes purpureæ, medio pallidae, trinervæ, cuspidatae. *Perigynium* $1\frac{4}{10}$ – $1\frac{6}{10}$ lin. longum, $\frac{8}{10}$ – $1\frac{1}{10}$ lin. latum, nervatum, nervis 2–4 vel 5–7 concoloribus. *Achenium* $\frac{8}{10}$ –1 lin. longum, $\frac{6}{10}$ lin. latum, obovatum, lenticulare, castaneum vel atro-purpureum, punctulatum, basi styli æquali apiculatum, vix cavitatem dimidiatum perigynii implens.

Affinis *C. crinitæ*, Lam. Differt spicis pluribus, sessilibus; perigyniis nervatis, bidentatis, ferrugineo-punctatis; squamis brevius euspidatis; foliis rigidis.

This species, which I first met with in the herbarium of the late Mr. Prescott, to whom it was entrusted by Dr. Wallich for description, was accompanied by a ticket from Dr. Wallich's catalogue, referring it with a query to Nipal. Dr. Gray subsequently sent it to me with the other *Carices* from Captain Wilkes's American Exploring Expedition, by whom it was found in the woods of the island of Hawaii; and the conjecture of Dr. Wallich as to its being a native of Nipal must be considered very doubtful.

109. *C. paleata* (Boott); spicis 7–10 cylindricis densifloris, masculis 2–4 contiguis sessilibus, infima bracteata, reliquis androgynis, ima basi attenuatis masculis remotis,

inferioribus longe exserte pedunculatis cernuis longissime bracteatis olivaceis ; stigmatibus 2-3 ; perigyniis obovatis vel ovalibus rostellatis bifidis plus minus nervatis, nervis marginalibus pallidis superne serrato-dentatis, coriaceis olivaceis purpureo-maculatis, squama ovata acuta vel obtusa paleacea longe hispido-cuspidata brevioribus longioribusque.—*C. paleata*, *Boott*, *Lin. Trans.* xx. 127. (TAB. CXVI.)

HAB. In ins. Juan Fernandez, *Scouler* (*Herb. Hooker et Fielding*) ; *Cuming*, n. 1341.

Culmus 1½-2½-ped., triquetter, validus, laevis, superne seaber, basi foliatus ; pars spicas gerens 1-2-pedalis. *Folia* 3 lin. lata, culmo breviora, firma, plana. *Bracteæ* vaginatæ, culmo longiores. *Vaginæ* 3 lin. ad 2 poll. longæ. *Pedunculi* ligulato-compressi : inferiores 3-4½ poll. longi, laeves. *Spicæ masculæ* 7-20 lin. longæ, 1-2 lin. latæ, pallidæ : reliquæ ima basi masculæ, 1-2½ poll. longæ, 2 lin. latæ : superiores subinde apice masculæ. *Squamæ* omnes valide hispidoque cuspidatae : masculæ obtusæ, ciliatæ. *Perigynium* 1-¾ lin. longum, ¼-¾ lin. latum, plano-convexum vel triquetrum, ore bifido sebro, nervis marginalibus superne serrato-dentatis, aliis plus minus distinctis, rostello pallido. *Achenium* ¼-1 lin. longum, ¼ lin. latum, perigynio conforme, triquetrum vel compressum flavidum, basi styli contorta.

Affinis *C. lucidae*. Differt spicis longioribus, inferioribus longe pedunculatis cernuis pallidis ; perigyniis olivaceis, marginis scabris ; foliis latioribus, planis.

This species is allied to several of the New Zealand *Carices* in habit, having, like them, male florets at the base of the female spikes. It has not been found beyond the limits of the island of Juan Fernandez, where it was first discovered by Mr. Scouler.

110. *C. sororia* (Kunth) ; spica ovata capitata longe bracteata, e spiculis androgynis apice masculis pluribus densis composita ; stigmatibns 2 ; perigyniis late ovatis attenuato-rostratis bidentatis compressis fuscis marginibus viridibus acutis superne serratis antice encrvii postice basi nervatis, nervis superne cyanidis, membranaceis patentibus, squama ovata acuta hyalina albida nervo viridi latioribus longioribusque.—*C. sororia*, *Kunth*, *Cyp. p. 379.* (TAB. CXVII.)

HAB. In America australi. Montevideo, *Sellow*.

Cæspitosa. *Radix* fibrosa. *Culmus* 2-pedalis, gracilis, triquetter, nudus, basi foliatus, superne scabriusculus. *Folia* 1-1½ lin. lata, culmo breviora, mollia, graminea, lète viridia. *Bractea* infima 2 poll. longa, refracta : altera setacea, brevis. *Spica* 8 lin. longa, 6 lin. lata, densa, utrinque obtusa. *Squamæ* conformes. *Perigynium* 2-¾ lin. longum, 1 lin. latum. *Achenium* stipitatum, 1 lin. longum, ¼ lin. latum, ellipticum, compressum, basi styli æquali apiculatum.

The figure and description of this species are from the original specimen of Sellow, in the Berlin Herbarium. The densely capitate spike and the terete base of the style distinguish it from the allied species of the group to which it belongs.

111. *C. sychnocephala* (Carey) ; spica ovali capitata involucrata straminea, e spiculis 6-10 vel pluribus androgynis basi masculis plus minus dense aggregatis, infima sèpe remotiuscula discreta ; bracteis longissimis ; stigmatibus 2 ; perigyniis angustis ovato-lanceolatis in rostrum elongatum attenuatis basi spongiosis marginibus anguste alatis serratis alte bifidis utrinque nervatis, squama lanceolata acuminata cuspidata hyalina albida longioribus.—*C. sychnocephala*, *Carey*, *Sill. Journ.* iv. 24

(1847), in *Gray*, *Bot. 515* ; *Sartwell*, *Eas. n.* 38. *C. cyperoides*, *Dewey*, *Sill. iii.* 171. (TAB. CXVIII.)

HAB. In America septentrionali. New York, *Vasey*.

Culmus 3-12-poll., obtusangulus, glaber, foliis vaginantibus munitus. *Folia* sublineam lata : superius sèpe culmo longius. *Bracteæ* 3-4, inæquales : inferiores spicam longissime superantes. *Spica* 7-14 lin. longa, 6 lin. lata, utrinque acuta. *Spiculae* obovatæ, plus minus arcte congestæ : infima sèpe 2-3 lin. remota, discreta. *Squamæ* conformes. *Perigynium* 2-¾ lin. longum, ¼ lin. latum, infra basin achenii contractam spongiosum, brevissime stipitatum. *Achenium* ½ lin. longum, ¼ lin. latum, plano-convexusculum, lucidum, sub lente tenuissime punctulatum, basi styli æquali apiculatum.

A *C. cyperoides*, L., differt, spica ovali, longiori, laxiori ; perigynio breviori, basi spongioso, brevissime stipitato.

112. *C. appressa* (Brown) ; spica ferruginea oblonga vel elongata plus minus lata compacta cylindrica, vel laxa lanceolata, basi ramosa, ramis ubique spiculiferis, omnibus abbreviatis congestis, vel inferioribus elongatis discretis approximatis, e spiculis numerosissimis androgynis apice masculis ovatis contiguis decomposita, nuda vel angustæ bracteata ; stigmatibus 2 ; perigyniis ovatis vel orbiculatis rostratis bifidis plano-convexis marginibus incurvis e medio sursum anguste alatis serratis, utrinque nervatis, nervis quibusdam superne evanidis, stipitatis demum patentibus ferrugineis, squama ovata apice serrulata acuta vel mucronata latioribus longioribusque.—*C. appressa*, *Brown*, *Prod. 242* ; *Kunth*, 389 ; *Kunze*, 45. t. 11 ; *Hooker*, *Fl. Antarc.* i. 90 ; *Lehman*, *Pl. Preiss.* ii. 94. (TAB. CXIX. et CXX.)

HAB. In Nova Hollandia, Tasmania, etc. Port Jackson, *Brown*. Swan River, *Drummond*. Tasmania, *Gunn*, *Preiss*. Lord Auckland's Group, Campbell's Island, *Dr. Hooker*.

Rhizoma lignosum, reliquiis fibrosis nigris foliorum vestitum. *Culmus* 1-5-ped., triquetter, validus, rigidus, scaber, basi foliis vestientibus tectus. *Folia* 3-5 lin. lata, culmum subæquantia. *Bracteæ* setaceæ, ramis breviores, rarius infima 4 poll. longa : sèpe obsoleta. *Spica* insigniter variat : 2-6 poll. longa, 6-12 lin. lata, quasi longe capitata, ramis omnibus abbreviatis arcte congestis : vel 8-12 poll. longa, 2-8 lin. lata, laxa, ramis inferioribus discretis : infimis sèpe 2-3 poll. longis, approximatis, appressis. *Squamæ* conformes : masculæ sèpius muticæ. *Perigynium* 1-¾-¾ lin. longum, ¼-1 lin. latum, basi spongiosum, rostro plus minus longo. *Achenium* ¼ lin. longum, ¼ lin. latum, suborbiculatum, basi styli crassiori apiculatum.

This species is common in Australia and Tasmania, Lord Auckland's Group, and Campbell's Island, varying in the size and compactness of the spike. The specimen figured Tab. CIX. is from Swan River ; the large one in Tab. CXX. from Tasmania, and not mature. Dr. Hooker says it is found in woods near the sea, forming large harsh tufts.

113. *C. virgata* (Solander) ; spica ferruginea vel fusco-brunnea elongata linearis angusta laxa, basi interrupta ramosa, ramis ubique spiculiferis appressis inæqualibus e medio deorsum longioribus discretis, infimis remotis e spiculis androgynis apice masculis parvis numerosis ovatis decomposita nuda vel bracteata ; stigmatibus 2 ; perigyniis cordatis rostratis bidentatis plano-convexis marginibus superne anguste alatis erosio, utrinque nervatis stipitatis appressis, squamam ovatam apice serrulatam acutam vel mucronatam rigidam æquilateram subæquantibus.—*C. virgata*, *Solander*, *MSS. (Herb. Banks)* ; *Hooker*, *Fl.*

N. Zeal. i. 282. *C. collata*, *Boott*, *Lond. Jour. Bot.* iii. 447. (TAB. CXXI. et CXXII.)

HAB. In Nova Zelandia. Prope Matuaro, Totaranui, *Banks et Solander* (1769), in sylvis. Tippoone, *Wilkes*. Bay of Islands, *Sinclair*, *Dr. Hooker*, etc.

Culmus 2-ped., triqueter, laevis vel apice scabriusculus, basi foliosus, rudimentisque foliorum brunneis, foliisque vestientibus tectus. *Folia* 2-2½ lin. lata, culmo longiora, saepius praeципue inferne involuta. *Bractæ* setaceæ, breves, vel infima 8 poll. longa, saepè obsoleta. *Spica* 9-21 poll. longa, 2-5 lin. lata, apice saepè spiculis solitariis discretis vel contiguis: inferne ramis ubique spiculiferis deorsum magis remotis, inæqualibus: inferioribus 2-5 poll. longis, crectis, appressis: infimis interdum abbreviatis. *Spiculae* parvæ, ovatæ. *Squamæ* conformes. *Perigynium* lineam longum, ½ lin. latum, basi spongiosum. *Achenium* 7/10 lin. longum, vix ½ lin. latum, ovatum, basi productum, basi styli crassiori decidua.

A *C. appressa* differt, culmo laevi; foliis saepè involutis; spica angustiori, longiori; perigyniis minoribus, marginibus erosis, erectis; squamis rigidis.

114. *C. secta* (*Boott*); spica ferruginea elongata laxa aperta nutanti basi ramosa, ramis inferioribus gracilibus longis, superne tantum spiculiferis, e spiculis androgynis apice masculis parvis numerosis decomposita nuda vel bracteata; stigmatibus 2; perigyniis oblongo- vel subrotundo-ovatis rostratis, antice oblique scctis bidentatis, superne marginibus acutis pallidis serratis subplano-convexis fusco-castaneis lucidis cnerviis vel basi obsolete nervatis spongiosis, squama ovata acuta vel mucronata æquata deum decolori longioribus vel subæquantibus.—*C. secta*, *Boott*; *Hooker*, *Fl. N. Zeal.* i. 281. (TAB. CXXIII. et CXXIV.)

HAB. In Nova Zelandia. Tippoone, *Wilkes et Sinclair*, etc. Northern and Middle Islands, *Dr. Hooker*, etc.

Culmus 2-3-ped., triqueter, gracilis, laevis, apice scaber. *Folia* 1-1½ lin. lata, culmum subæquantia, firma, carinata, scaberrima. *Spica* 1-1½-pedalis, nutans, basi laxe ramosa: rami superiores ½-1 poll. longi: inferiores quandoque pedales, gracillimi, superne tantum spiculiferi. *Squamæ* ferrugineæ, demum decolorcs. *Perigynium* 1-1½ lin. longum, 6/10-7/10 lin. latum, basi crasse spongiosum. *Achenium* 6/10-7/10 lin. longum, 3/10-4/10 lin. latum, obovatum, biconvexum, pallidum.

This species, which Mr. Sinclair says "grows in marshes and generally forms a matted column about three feet high, and a foot in diameter," belongs to the *Paniculatæ*-group, and is easily distinguished from *C. virgata*, by its lax nodding spike, and shining nerveless perigynium.

115. *C. tenella* (*Schkuhr*); spica oblonga tenui pallida, e spiculis 2-6 androgynis apice masculis parvis paucifloris, inferioribus subremotis brevi-setaceo-bracteatis; stigmatibus 2; perigyniis plano-convexissimis ovalibus basi contractis obtusis abrupte rostellatis utrinque nervatis nervis quibusdam superne evanidis, vel oblongis sensim rostellatis crebrius nervatis glabris nitidis ferrugincis demum fuscis, ore integro, spongiosis, squama ovata acuta rarius obtusa quandoque mucronulata pallide ferruginea marginibus albo-hyalina demum decolori longioribus.—*C. tenella*, *Schk.* 28. f. 104 *P. P.*; *Fries*, *Sum. Veget. Scand.* 224; *Anderson*, *Cyp. Scand.* 60. t. 4. f. 33; *Carey*, *Gray*, *Bot. (cd. 2)* 514: (non *Ehrh. Cal. Beiträge*, vi. 10. n. 98, quæ *C. canescens*, *L.*; non *Poiret*, *Ency.*

Suppl. iii. 282, quæ *Un. tenella*, *Br.*; non *Thuillier*, *Fl. Par.* 479, quæ *C. Schreberi*, *W.*) *C. loliacea*, *Schk. Suppl.* 18 (non *Lin.*). *C. disperma*, *Dewey*, *Sill.* viii. 266, (1824) etc.; *Kunth*, *Cypr.* 405: (non *Kunze*, *Reidgr.* 131. t. 33, quæ *C. rosea*, *Schk.*, var.; non *Steudel*, *Un. Itin.* quæ *C. Steudelii*, *Kunth.*) *C. gracilis*, *Gray*, *Sill.* iv. 19 (1847); *Carey*, *l. c.* 543 (ed. 1); *Sartwell*, *Exs.* n. 29: (non *Ehrh. Cal. n.* 78, quæ *C. loliacea*, *L.*; non *Schk. f.* 24 *E*, quæ *C. vitilis*, *Fr.?*; non *Brown*, *Prodr.*, quæ *propria species*.) *C. Blyttii*, *Lang. Car. Ger.* ct *Scand.* 38. (TAB. CXXV. et CXXVI.)

HAB. In Europa et America septentrionali. "In paludibus Norvegiæ, Sueciæ borealis, et Finlandiæ," *Fries*. In America Arctica, *Richardson*. In Montibus Saxosis, *Drummond*. "New England to Pennsylvania," *Carey*.

Radix stolonifera. *Culmus* 5-15-poll., gracilis, saepè setaceous, triqueter, superne scaber. *Folia* plana, ½-8/10 lin. lata, supra granulata, culmo breviora vel subæquantia. *Bractæ* ovato-lanceolate, plus minus setaceo-aristatae: infima quandoque 6-12 lin. longa. *Spica* 8-14 lin. longa, sublineam lata. *Spiculae* 2-5, rarius 6, parvæ, 2-6-floræ; c flosculis masculis 1-3 brevissime pedicellatis rarius perigynia superantibus, fœminisque 1-3 rarius 4 compositæ: superiores, rarius omnes, contiguæ: inferiores subremotæ. In speciminibus quibusdam spicula infra terminalcm, et summa (*rarius*) omnino mascula: infima rarissime composita, etiam brevè pedunculata. *Squamæ masculæ* angustiores, lanceolatae, acutæ, albæ: fœmineæ ovatae, acutæ vel obtusæ, muticæ vel mucronulatae, pallide ferrugineæ, marginibus albo-hyalinæ, demum omnino decolorcs. *Perigynium* 1-1½ lin. longum, 6/10 lin. latum, obtusum, abrupte rostellatum; nervis paucioribus, magis distantibus, quibusdam superne evanidis, basi contractum (Tab. CXXVI.): vel 1¾-1½ lin. longum, 8/10 lin. latum, sensim rostellatum, nervis pluribus crebris magis crasse spongiosum; ore integro; plano-convexissimum, postice nervis 2 marginalibus magis prominentibus, nitidum, ferrugineum, demum fusco-atrum (Tab. CXXV.). *Achenium* 7/10-9/10 lin. longum, ½ lin. latum, ovale, utrinque obtusum, lenticulare, nitidum, ferrugineum, demum fuscum, basi styli æquali decidua. *Stigmata* longa. *Stamina* 2.

This species, overlooked in the north of Europe since the time of Schkuhr, and, until Fries distinguished it, confounded in herbaria with *C. loliacea*, *L.*, has been familiar to American botanists since 1824, when it was described by Dewey under the name of *C. disperma*. Like *C. festiva*, Dewey, it is an example of a common American species, eventually, but rarely, found to be a native of the north of Europe; while *C. fulva*, Good., originally described as a native of Newfoundland, but rare among American species, is found very widely diffused in Europe.

Schkuhr originally received the specimen he has figured of *C. tenella* from Hedwig, who had forgotten whence he had received it; but in his 'Supplement' Schkuhr remarks he had since obtained it from Sweden. I have seen it in several herbaria sent from Sweden under the name of *C. loliacea*, with which it grows in the north of Europe, an association not hitherto found to exist in America. I have never seen *C. loliacea*, *L.*, from any part of North America. We are much more familiar with the American than with the European specimens of *C. tenella*. Among the profuse specimens brought from Arctic America by Sir John Richardson, and sent from the States by different botanists, I observe a difference in the thickness of the culm, the breadth of the leaves, and the size and form of the perigynium; but, as is usual with other species of the genus, these differences insensibly disappear. The European plant, for which I am indebted to Fries, is identical with the more gracile forms of the American ones. In Tab.

CXXVI. the left-hand specimen, No. 1, with the separate spike over it, are from Sweden, the others from New York. In Tab. CXXV. the specimens figured were from Arctic America, brought by Sir John Richardson.

116. *C. loliacea* (L.) ; spica oblonga pallida, e spiculis 3-4 androgynis basi masculis subrenotis composita, suprema basi attenuata, reliquis subglobosis, infima breve setaceo-bracteata ; stigmatibus 2 ; perigyniis ellipticis crostratis utrinque obtusis vel substipitatis, ore integro antice secto, plano-convexusculis valide nervatis pallidis, squama ovata obtusa mutica albo-hyalina medio viridi duplo longioribus.—*C. loliacea*, *L. Fl. Suec.* (ed. 2) 327. n. 840 (1755) ; *Wahl. Act. Holm.* 147 ; *Willd.* 237 (excl. *C. tenella*, *Sch.*) ; *Kunth*, 405 (excl. *C. tenella* et *gracilis*, *Schk.*) ; *Reichenbach, Icon.* ix. t. 214 ; *Anderson, Cyp. Scand.* 59. t. 4. f. 34 ; *Lang. Car. Ger. et Scand.* 62 ; *Koch, Syn.* n. 41 ; *Hop. et St. Car. Ger.* t. 29 : (non *Schk. f.* 91, nec *Schreb.*, nec *Thuill.*, quæ *C. muri-cata*, *L.*, var. ; non *Dewey, Sill.* xi. 306 ; non *Tor. et Schw.* 311, nec *Tor. Mon.* 391.) *C. gracilis*, *Ehrh. Cal.* n. 78 : (non *Gray, Sill.* iv. 19, nec *Carey, l. c.* 543. ed. 1.) *C. Sibirica*, *Willd. Herb.* ; *Sprengel, Syst.* 809 ; *Kunth*, 406 ; *Lebedour, Fl. Alt.* iv. 205. (TAB. CXXVII.)

HAB. In Europa boreali, Germania, et Sibiria. In Suecia, Norvegia, Lapponia, *Lin.*, *Anderson*, etc. In Germania, *Reichenbach*. In pratis siccis ad Obum fluv., *Pallas, in Herb. Willd.* “*C. Sibirica*,” *W.*

Radix stolonifera. *Culmus* 1-1½-ped., gracilis, superne nudus, scaber. *Folia* plana, ½-1 lin. lata, culmo breviora. *Bractea* infima setacea, saepe spicula duplo longior, vel ea brevior. *Spica* 6-14 lin. longa, 2 lin. lata. *Spiculae* 3-4 alternae, suprema basi attenuato-masca ; flosculis foemineis pluribus (saepe 6-8) praedita : reliquæ subrotundæ, flosculis masculis paucioribus. *Squamæ* conformes. *Perigynium* 1-2 lin. longum, ¼ lin. latum, ellipticum, apice obtusum, rotundatum, vel rarius subacute ; ore integro vel antice secto ; compressum, plano-convexusculum, valide nervatum, nervis concordibus, pallidum, demum ferrugineum, sub lente tenuissime granulatum, glabrum, basi productum. *Achenium* 8 lin. longum, ½ lin. latum, ovale, utrinque obtusum, plano-convexusculum. *Stigmata* brevia.

I have never seen this species from America. The apex of the perigynium is occasionally subacute.

Linnaeus describes the spiculae as 4-8. I have never seen more than 4. The *C. Sibirica* of Willdenow's *Herb.*, first noticed, I believe, by Sprengel (who, from quoting the *C. tenella* and *C. gracilis* of *Schk.* as synonyms to *C. loliacea*, evidently had no distinct idea of the plant of Linnaeus), is in no respect different from *C. loliacea*, *L.* I have seen the specimens of Pallas, who had named them “*Panicum? pauciflorum*.” Lebedour inserts the *C. Sibirica* in his *Fl. Altaica* on the authority of Sprengel, but adds, “*Nobis non obvia fuit.*” I am not aware of any one finding it in Siberia since Pallas. Reichenbach says *C. loliacea* has been found “in turfosis inter alnos,” in Westphalia.

117. *C. triceps* (Michaux) ; spicis 2-4 oblongis contiguis sessilibus erectis densifloris olivaceis, terminali basi mascula, reliquis foemineis evaginatis vel infima saepe longiori remota exserte pedunculata ; bracteis culmo longioribus ; stigmatibus 3 ; perigyniis late ovalibus vel obovatis compresso-triquetris obtusis erostratis, ore emarginato, nervosis granulatis demum ferrugineo-punctatis glabris olivaceis, squama ovata plus minus cuspidata acuta vel obtusa alba nervo viridi latioribus longioribus

vel brevioribus ; culmo foliis vaginisque hirsutis.—*C. triceps*, *Mich. ii.* 170 ; *Elliott*, ii. 538 ; *Carey, l. c.* 523 ; *Kunth, Cyp.* 430 (excl. *C. viridula*, *Mich.*) ; *Darlington*, 349. *C. hirsuta*, *Willd.* iv. 252 ; *Schk. f.* 172, *w. w. w.* ; *Kunth*, 430 ; *Elliott*, ii. 538 ; *Muhl.* 234 ; *Schw. et Tor.* 322 ; *Tor. Mon.* 408 ; *Dewey, Sill.* ix. 260, et xi. 315 ; *Sartwell, Exs. n.* 89. *C. viridula*, *Schw. et Tor.* 320 (non *Mich.*) ; *Dewey, l. c.* xi. 153. *C. complanata*, *Tor. Mon.* 408. (TAB. CXXVIII.)

HAB. In America septentrionali. Canada (*Torrey*) to Texas.

Cæspitosa. *Culmus* 1-1½-ped., acute triquetter, gracilis, rigidus, apice scaber, sparsimque hirsutus, basi rudimentis foliorum purpureis vaginisque hirsutis tectus, sursum foliis vaginantibus vestitus ; pars spicas gerens 1-2½ poll. longa. *Folia* 1-2 lin. lata : superiora culmo longiora, rigida, hirsuta, vaginis lanuginosis vel folia fere omnino glabra ; vaginis pubescentibus. *Bractæ* ½-1 lin. latæ, culmo saepe duplo-triplo longiores, evaginatae, vel infima 1-3 poll. remota, saepe sterilis, vaginata. *Vagina* 8 lin. longa, vel brevior. *Spicæ* 3-9 lin. longæ, 2-3 lin. latæ, omnes sessiles, contiguae, vel infima saepe longior, 1-3 poll. remota, breve exserte pedunculata. *Squamæ* albæ, medio virides : masculæ lanceolatæ, acutæ : foemineæ ovatae, acutæ vel obtusæ, plus minus longæ cuspidatae : interdum spicis floriferis aspectum squarrosum ob longitudinem cuspidis praebentes. *Perigynium* 1-2 lin. longum, 8-9 lin. latum, glabrum, vel (sub lente) quasi pulverulento-sabriuscum, nunquam vere pubescens : ore integro, setulis paucis obsito : vel emarginato, glabro, pallidiori : plerumque obtusissimum, vel abrupte minime rostellatum, granulatum, demum saepe ferrugineo-punctatum : nervosum. *Achenium* lineam longum, 6 lin. latum, ovale, triquetrum, flavidum, basi styli curvata apiculatum.

A *C. virescenti*, *Muhl.*, spicis olivaceis, crassioribus, sessilibus, magis approximatis ; culmo hirsuto ; vaginis lanuginosis ; perigyniis majoribus, glabris vel scabriuscum, nusquam pubescentibus, abunde differt.

Michaux and Elliott having described the southern plant with smooth leaves, though Elliott notices their being pubescent near the sheaths, their *C. triceps* was for a long time considered obscure, and Willdenow's name of *C. hirsuta* suiting the more familiar aspect of the plant, prevailed. The difficulty in Elliott's case was increased, as he had described *C. hirsuta* in his ‘*Flora*,’ probably from the only specimen, which Mr. Curtis informs me is in Elliott's herbarium, sent to him by Muhlenberg. The species was inserted by Elliott in his ‘*Flora*’ on the authority of Dr. Baldwin, whose specimens, with “leaves somewhat hairy,” were found in Georgia. The specimens I have from Texas and the Carolinas are in no respect different from the northern plant, except in the smoothness of the leaves, and comparatively smooth sheaths. As to what has been described as pubescence on the young perigynia, I find it quite as perceptible in their mature state, nor does it seem to me to resemble pubescence. In some specimens the female scale has a long cuspidate point, giving quite a squarrose appearance to the spike, and it was this form which Schw. and Tor. supposed to be the *C. viridula* of Michaux, a plant erroneously said by Michaux to be allied to *C. triceps*, with which it has no affinity whatever, being a dwarfed state of one of the several forms of *C. Æderi*, as that very doubtful species is regarded by some authors.

118. *C. lanuginosa* (Michaux) ; spicis saepius 4 vel 3-5 rarius 6 erectis purpureis demum pallidis, masculis saepius 2 vel 1-3 rarius 4 contiguis, una vel altera interdum apice foeminea, cylindricis, foemineis saepius 2 vel 1-3 rarius 4 oblongis vel cylindricis remotis, sessilibus evaginatis vel infima plus minus vaginata, rarius

longe exserte pedunculata basique composita; bracteis foliaceis, infima culmo longiori vel breviori; stigmatibus 3; perigyniis ovatis vel ovalibus obtuse trigonis rostellatis bicuspidatis nervatis hispidissimis coriaceis subturgidis pallide olivaceis vel cinereis, squama lanceolata acuminata hispido-cuspidata purpurea medio viridi plerumque brevioribus latioribusque.—*C. lanuginosa*, Mich. ii. 175; *Tor. Cyp.* 410; *Carey*, 529; *Darlington*, 352; *Sartwell, Exs. n.* 126. *C. pellita*, Muhl. 258; *Willd.* iv. 302; *Sehk.* 84. f. 149, 150; *Kunth*, 483; *Schw. et Tor.* 368; *Dewey, Sill.* ix. 70; *Beek*, 444. (TAB. CXXIX.)

HAB. In America septentrionali. Arctic America to Pennsylvania, Kentucky, North-west Coast.

Radix repens. *Culmus* 1–2-ped., gracilis, triquetter, firmus, fere omnino infra spicas laevis, vel scaber: basi foliis vestientibus, saepe rubellis, vaginisque reticulato-fissis, extus saepe scabridis tectus; pars spicas gerens 4–15 poll. longa. *Folia* plana, 1–2 lin. lata, culmo saepe longiora: inferiora, vaginæque saepe inconspicue leviter reticulato-venosæ. *Bractæ* foliaceæ: omnes evaginatae, vel infima, longitudine mutabilis, plus minus vaginata. *Auriculæ* purpureæ. *Vagina* 1–6, etiam rarius 18–24 lin. longa. *Pedunculus* infimus 2–6 lin. rarius 1–4 poll. longus, scaber. *Spicæ masculæ* purpureæ, demum flavidæ, cylindricæ, extremæ majores: summa 16–26 lin. longa, 1½ lin. lata, pedunculata: reliquæ sessiles, breviores, infima bracteata. *Squamæ masculæ* lanceolatæ, abrupte apiculatae vel acuminatae, acutæ vel cuspidatae, rarius obtusæ, muticæ, apice ciliatae, purpureæ, demum stramineæ, medio viridi nervatae. *Spicæ fœmineæ* ½–2 poll. longæ, 3–4 lin. latae, inter se 1–3, vel infima quandoque 9 poll. remota: summa subinde abbreviata, saepe apice mascula, vel omnes sessiles, evaginatae, vel infima breve vel longe vaginata, exserteque pedunculata, basi subinde laxiflora, rarius composita. *Perigynium* 2–2½ lin. longum, 9–1½ lin. latum; rostro 3–7 lin. longo; bicuspidatum, laciniis linearibus, scabris; nervis superne saepe inconspicuis. *Achenium* 1½ lin. longum, 7 lin. latum, triquetro-ovobatum vel ovale, stipitatum, basi styli æquali persistente apiculatum, olivaceum. *Stylus* hirsutulus, saepe contortus.

A *C. filiformi*, L., differt, culmo validiori, breviori; foliis planis, brevioribus; spicis masculis plerumque brevioribus, quandoque apice fœmineis; fœmineis longioribus.

In the specimens I have examined I find—

15 with 3 spikes.	12 with 1 male.	8 with 1 female.
30 „ 4	36 „ 2	45 „ 2
17 „ 5	14 „ 3	10 „ 3
2 „ 6	1 „ 4	1 „ 4

In one all the spikes were female. One or more of the male spikes were rarely female at the top, and the upper female male at top.

I have alluded to the very close affinity of this species with *C. Wallichiana* of India, which I think will be found to be merely a more luxuriant form of *C. lanuginosa*.

119. *C. evoluta* (Hartman); spicis 6 rarius 5–7 cylindricis erectis fusco-luridis, masculis 3 vel 2–4, infima bracteata, fœmineis 3 vel 2–4 crassis, suprema saepe apice mascula, approximatis evaginatis, infima brevi-pedunculata; bracteis foliaceis, culmo plerumque longioribus; stigmatibus 3; perigyniis ovatis rostellatis emarginato-bicuspidatis plus minus nervatis hispidis olivaceis, squama ovata acuta cuspidata purpurea, medio viridi, latioribus brevioribus vel longioribus.—*C. evoluta*, Hart. *Vet. Ac. Handl.* 156 (1818); *Wahl. Fl. Suec.* ii. 611; *Kunth*, 485; *Koch, Syn.* 887; *Kunze*, 33. t. 7; *Anderson*, 20, t. 8. f. 102; *Reichenbach, Cyp.* 28, t. 267; *Hoppe et St.*

t. 105. *C. filiformis*, β, *Coss. et Ger. Fl. Env. Paris*, 606. (TAB. CXXX.)

HAB. In Europa. "In fossis et ad ripas limosas lacuum Scaniæ et prope Holmiam," *Anderson*. Mennecy, Paris, *Coss. et Germ.*

Radix repens. *Culmus* sub-4-ped., validus, triquetter, scaber, basi foliis longe vestientibus vaginisque purpureo-ferrugineis reticulato-fissis tectus; pars spicas gerens 6–8 poll. longa. *Folia* 2–4 lin. lata, plana, culmo breviora, grosse reticulato-venosa. *Bractæ* plerumque culmo longiores, auriculatae: infima vix unquam subvaginata. *Vagina* sublineam longa. *Pedunculus* 3–8 lin. longus, triquetter, scaber. *Spicæ masculæ* contiguæ, sessiles: suprema 1½–2½ poll. longa, 2–2½ lin. lata: extremæ majores, infima bracteata. *Squamæ* lanceolatae, obtusæ, muticæ vel superiores cuspidatae, fusco-luridæ, demum ferrugineæ vel decolores. *Spicæ fœmineæ* 1–2½ poll. longæ, 3–4 lin. latae, approximatae vel infima 3 poll. remota, breve pedunculata. *Perigynium* 1¾–2¼ lin. longum, 9–1 lin. latum, late emarginatum, breve bicuspidatum, nervatum, nervis plus minus prominentibus, hispidum.

Differt a *C. lanuginosa*, Mich., culmo altiori, crassiori, semper scabro; foliis latioribus, vaginisque grosse reticulato-venosis; bracteis evaginatis; spicis fuscis, magis approximatis, majoribus.

I have found in the specimens I have seen of this species—

1 with 5 spikes.	1 with 2 male.	1 with 2 female.
7 „ 6	7 „ 3	8 „ 3
2 „ 7	2 „ 4	1 „ 4

Anderson says that it has been found growing in a marsh with *C. riparia* and *C. paludosa*. It looks like a hybrid between one of these species and *C. filiformis*. I have not been able to find any perfect achene. Its broad flat leaves and coarser structure distinguish it from *C. filiformis*, L., though the European specimens of this last species, and especially those which I have from the neighbourhood of Paris, approach *C. evoluta* more nearly than the *C. filiformis* of America does. This last bears the same relation to *C. lanuginosa* as the *C. filiformis* of Europe does to *C. evoluta*. I have not seen any specimens of *C. evoluta* from North America, though Cosson and Germain, in their 'Observations sur quelques Plantes Critiques des Environs de Paris,' p. 24, quote "Green, Boston, in Herb. Guillemin," for *C. evoluta*. I have specimens from that locality, gathered by Mr. Green, which are evidently *C. lanuginosa*, Mich.

120. *C. vestita* (Willdenow); spicis 3–4 rarius 2 densifloris purpureo-ferrugineis approximatis, mascula plerumque solitaria elongata demum castanea, fœmineis 2–3 rarius 1 ovatis vel oblongis sessilibus crassis, infima subinde remota pedunculata; bractea evaginata subulata vel foliacea culmo breviori; stigmatibus 3; perigyniis ovalibus triquetris rostratis, ore obliquo albo-hyalino demum sub-bilobo, hispidis nervatis olivaceis ferrugineo tinctis, squama ovata vel lanceolata acuta vel acuminato-cuspidata purpurea margine albo-hyalina latioribus longioribus vel subæquantibus.—*C. vestita*, Willd. iv. 263; *Sehk.* 51. f. 182; *Kunth*, 518; *Muhl.* 238; *Elliott*, ii. 542; *Dewey*, ix. 261; *Schw. et Tor.* 331; *Carey*, 529; *Beek*, 437; *Sartwell*, n. 127. (TAB. CXXXI.)

HAB. In America septentrionali. New England to Georgia, in arenosis.

Culmus 1½–3-ped., triquetter, scaber, validus, superne nudus, basi foliatus, vaginisque purpureis reticulato-fissis tectus; pars spicas gerens 1½–3 rarius 4 poll. longa. *Folia* 1–2½ lin. lata, plana, culmo multum breviora. *Bractæ* infima subulata, spicæ vix longior; vel foliacca, 1–2 lin. lata, culmo brevior, rarius subæquans. *Spica mascula* 1–2 poll. longa, 1–2 lin. lata, ssc-

silis vel pedunculata: rarius altera oblonga ad ejus basin sita. *Squamæ* lancolatae, obtusæ vel acutæ, apice marginibusque late albo-hyalinæ. *Spicæ fæmineæ* 4–8 lin. longæ, 3–4 lin. latae, sessiles, contiguae; vel infima 1 rarius $2\frac{1}{2}$ poll. remota, subpollicaris, basi attenuata, pedunculata: una vel rarius altera subinde apice maseula. *Perigynium* $1\frac{8}{10}$ – $2\frac{2}{10}$ lin. longum, $\frac{8}{10}$ – $\frac{9}{10}$ lin. latum, olivaceum, ferrugineo tinctum. *Achenium* $\frac{9}{10}$ – $1\frac{2}{10}$ lin. longum, $\frac{7}{10}$ – $\frac{8}{10}$ lin. latum, obovato- vel ovali-triquetrum, basi styli æquali recta vel contorta apiculatum.

Muhlenberg remarks the stigmas are two or three. I have observed two only apparent occasionally, but in each case the achene was triquetrous, and the base of a third stigma visible. Tuckerman places this species among the *Montanæ*, and Carey associates it with *C. Halseyana*. I think its immediate affinity is with *C. scabrata* and *C. amplifolia*. I have never seen any specimens so far south as Georgia. Elliott gives no particular locality, but quotes Pursh for its growing in wet meadows. His specimen was from Mr. Collins, and probably from Pennsylvania. Carey describes it as growing in sandy soil, and I have very fine specimens from Tuckerman from "pine plains" at Schenectady, New York.

121. *C. filiformis* (Lin.) ; spicis 3–4 rarius 2–5 erectis purpureis masculis 1–2 rarius 3–4, terminali pedunculata saepe elongata, fœmineis 2 rarius 1–3 ovalibus vel oblongo-cylindricis approximatis sessilibus, vel infima rarius plus minus longe vaginata exserte pedunculata basi attenuato-laxiflora subremota; bracteis convolutis auriculatis, infima culmo longiori vel breviori; stigmatibus 3; perigyniis ovalibus vel ellipticis obtuse trigonis rostellatis bifurcatis subturgidis hispidis nervatis olivaceis vel pallide ferrugineis, squama ovata acuta cuspidata purpurea nervo viridi longioribus vel brevioribus.—*C. filiformis*, L. Sp. Pl. 1385; Good. Lin. Trans. ii. 172. t. 20. f. 5; Willd. iv. 303; Schk. K. 45; Kunth, 484; Anderson, xx. t. 8. f. 103, etc. etc.; Dewey, Sill. vii. 268; Schw. et Tor. 364; Carey, 529; Beek, 443; Sartwell, Exs. n. 125. *C. tomentosa*, Light. ii. 552. *C. splendida*, Willd. Pr. t. 1. f. 3. *C. lasiocarpa*, Gaud. Agrost. ii. 125. (TAB. CXXXII.)

HAB. In Europa et America septentrionali, in paludosis.

Radix repens. *Culmus* $1\frac{1}{2}$ –3-ped., filiformis, acute triquetter, superne lævis vel sebriuscus, basi foliatus, vaginisque purpureis reticulato-fissis tectus; pars spicas gerens 2–12 poll. longa. *Folia* convoluta, dorso convexa, facie canaliculata, culmo saepe longiora, firma; vaginis quandoque extus seabridis, leviter reticulato-venosis. *Bractæ* culmo longiores vel breviores, auriculatae, evaginatae, vel infima plus minus vaginata; vagina 1–18 lin. longa. *Pedunculus* infimus 2 lin. ad $3\frac{1}{2}$ poll. longus, triqueter, scaber. *Spicæ masculæ* saepius 1–2: suprema $1\frac{1}{2}$ –3 poll. longa, $1\frac{1}{4}$ – $1\frac{1}{2}$ lin. lata, pedunculata: purpureæ, demum flavidæ: infima bracteata, subremota: squamae lanceolatae, apice saepe ciliatae, purpureæ, margine anguste albo-scariosæ, obtusæ, muticæ, vel subacutæ; nervo extra apicem producto. *Spicæ fæmineæ* saepius 2, abbreviatae vel oblongo-cylindricæ, 6–18 lin. longæ, 3 lin. latae: suprema rarius apice mascula: infima basi attenuato-laxiflora. *Perigynium* $2\frac{4}{10}$ –3 lin. longum, $1\frac{1}{10}$ – $1\frac{1}{10}$ lin. latum, nervis superne saepe evanidis. *Achenium* $1\frac{1}{10}$ lin. longum, $\frac{6}{10}$ – $\frac{7}{10}$ lin. latum, triquetro-ovatum vel ovale, stipitatum, basi styli æquali apiculatum.

I find in the European specimens of this species—

4 with 2 spikes.	33 with 1 male.	14 with 1 female.
35 „ 3	25 „ 2	49 „ 2
20 „ 4	8 „ 3	3 „ 3
7 „ 5	—	—
—	66	66

In the American—

17 with 3 spikes.	15 with 1 male.	8 with 1 female.
28 „ 4	28 „ 2	41 „ 2
7 „ 5	8 „ 3	3 „ 3
	1 „ 4	
—	—	—
52	52	52

In both European and American—		
4 with 2 spikes.	48 with 1 male.	22 with 1 female.
52 „ 3	53 „ 2	90 „ 2
48 „ 4	16 „ 3	6 „ 3
14 „ 5	1 „ 4	

The American plant is paler and generally more gracile than the European one, especially than the remarkable specimens from Mennecy, near Paris, which I have from M. Gay, and from Herb. Maire, under the name of *C. filiformis*, and which in size certainly approach *C. evoluta*. All these specimens have the lower female spike conspicuously vaginate. Cosson and Germain (Fl. des Environs de Paris, p. 606) quote Mennecy as the habitat of *C. evoluta*, which they regard as a var. β of *C. filiformis*, but they remark "bractées non-engainantes, même l'inférieure."

The specimens of *C. filiformis*, figured Tab. CXXXII., are from Rhode Island. It extends (as far as I am informed) from Arctic America to Ohio.

122. *C. Sullivantii* (Boott); spicis 4–6 oblongo-cylindricis gracilibus erectis albo-viridibus demum ferrugineis, terminali mascula subsessili, reliquis fœmineis laxifloris, suprema evaginata interdum geminata, superioribus contiguous, inferioribus exserte pedunculatis, infima plus minus remota basi attenuata saepe composita; bracteis superioribus abbreviatis, infima culmo multum breviori vel subæquante; stigmatibus 3; perigyniis ovatis vel ellipticis rostellatis, ore emarginato vel integro hyalino, viridibus demum ferrugineis enerviis vel obscure nervatis hispido-pilosus pellucide punctatis stipitatis, squamae æquilatera albida medio viridi ciliata obtusa interdum emarginata cuspidata vel acuta mutica longioribus vel cuspidate brevioribus.—*C. Sullivantii*, Boott, Gray, Sill. xlvi. 29; Dewey, Sill. xlvi. 44; Carey, l. c. 527; Sartwell, Exs. n. 116. (TAB. CXXXIII.)

HAB. In America septentrionali, in sylvaticis. Columbus, Ohio, *Sullivan*.

Culmus folia vaginæque pilosæ. *Culmus* $1\frac{1}{2}$ – $2\frac{1}{2}$ -ped., firmus, aeutangulus, inferne foliatus, basi rudimentis foliorum atro-purpureis tectus; pars spicas gerens 2–5 rarius 9–12 poll. longa. *Folia* 2– $3\frac{1}{2}$ lin. lata, culmo breviora. *Bractæ* infima foliacea, eulum subæquans, vel (remota) multum brevior: superiores setaceæ, spicis breviores. *Vagina* infima 3–18 lin. longa, intus albida ferrugineo punctata. *Pedunculus* infimus $\frac{1}{2}$ –3 poll. longus: superiores breves. *Spica mascula* 7–15 lin. longa, $\frac{2}{3}$ –1 lin. lata, sessilis vel subsessilis. *Spicæ fæmineæ* 1– $1\frac{1}{2}$ poll. longæ, 1– $1\frac{1}{2}$ lin. latae: superiores contiguae: infima 6–12 poll. interdum remota, saepe basi composita: superima sessilis, evaginata, interdum geminata. *Squamæ* masculæ arcte imbricatae, obtusæ, muticæ, castaneæ, margine hyalinæ, apice ciliatae, nervo scabro: fœmineæ albidae; inferiores obtusæ, saepe emarginatae, longius cuspidatae: superiores saepe acutæ muticæ: ciliatae. *Perigynium* (abortivum) $1\frac{6}{10}$ – $1\frac{8}{10}$ lin. longum, $\frac{8}{10}$ latum, plerumque enerve, rarius obscure nervatum, hispido-pilosum. *Achenium* (abortivum) oblongo-triquetrum.

In 27 specimens I find—

1 with 3 spikes.	In all the terminal spike is male.
5 „ 4	In 6 the upper female spike is geminate.
15 „ 5	In 13 the lower spike is compound at base.
6 „ 6	

This species differs from *C. arctata* in the pilose culm, leaves,

sheaths, and perigynium; erect, often compound spikes, and obtuse, often emarginate scales. Mr. Sullivant found it growing with *C. pubescens* and *C. gracillima*, and thinks it may prove to be a hybrid between them.* *C. Kneskernii*, Dewey, found in Oneida County, New York, a plant only known from a few immature specimens, is closely allied to it, differing merely in a smooth and more distinctly nerved perigynium. Mr. Carey has referred it to *C. arctata*, but the pilose culm and leaves, and the copious pellueid spots on the perigynium ally it more closely to *C. Sullivantii*.

123. *C. venusta* (Dewey); spicis 3–5 cylindricis pedunculatis, terminali gracili mascula, reliquis foemineis subcrassis densifloris, superioribus approximatis, inferioribus remotissimis basi attenuatis exserte pedunculatis nutantibus; bracteis inferioribus culmo multum brevioribus; stigmatibus 3; perigyniis triquetris fusiformibus utrinque acutis rostellatis, ore albo-hyalino integro oblique secto ciliato, undique scabris valide nervatis olivaceis demum ferrugineis ferrugineo punctatis, squama oblonga obtusa mutica (vel inferioribus cuspidatis) ferruginea medio nervata scabra apice hyalina ciliata latioribus duplo longioribus.—*C. venusta*, Dewey, *Sill.* xxvi. 107; *Tor. Mon.* 416; *Sartwell, Exs.* n. 119. (TAB. CXXXIV.)

HAB. In America septentrionali. Florida, Dr. Chapman.

Var. β ; spicis 4 gracillimis, terminali mascula, foemineis laxifloris; perigyniis angustioribus, rostro longiori, ore hyalino bilobo, scabris tenuiter nervatis, squama lanceolata obtusa vel acuta, infima acuminata albida duplo longioribus.—New Carolina, Mr. Curtis.

Var. γ ; spicis 3 erectis brevioribus, terminali mascula, foemineis densifloris; perigyniis glabris rostellatis, rostro ad margines saepe scabro, squama ferruginea obtusa vel acuta plus minus longioribus.—New Orleans, Drummond, n. 434.

a. *Culmus* 2–3½-ped., gracilis, apice scaber, basi rudimentis foliorum purpureis scabriusculis tectus; pars spicas gerens 1–2½ ped. longa. *Folia* 1½–3 lin. lata, culmo breviora, utrinque scabra. *Bractae* vaginatae: inferiores culmo multum breviores: mediae eo longiores: summa setacea, brevior. *Vagina* infima 2–5 poll. longa, scabriuscula. *Pedunculi* setacei, scabri: infimus 4–5½ poll. longus, plus minus exsertus. *Spica* mascula 14 lin. ad 2 poll. longa, lineam lata, basi attenuata. *Spicæ* foemineæ 9 lin. ad 2 poll. longæ, 3 lin. latæ: inferiores 6–18 poll. remotæ, nutantes vel erectæ. *Squamæ* omnes ferrugineæ, ciliatæ, dorso virides, nervatæ, scabré, obtusæ: inferiores cuspidatæ. *Perigynium* 3–3½ lin. longum, $\frac{6}{10}$ – $\frac{9}{10}$ lin. latum, stipitatum. *Achenium* 1–1½ lin. longum, $\frac{6}{10}$ – $\frac{7}{10}$ lin. latum, triquetrum, ovale vel obovatum, stipitatum, basi styli apiculatum, stramineum.

The varieties β and γ , though differing from each other and from the typical form, I can only refer to it. The rough perigynium of β separates it from *C. debilis*, to which in other respects it is closely allied: and the form of the perigynium, though smooth, of the var. γ , and its general aspect, connect it more immediately with *C. venusta*. A more familiar acquaintance with these southern plants may lead hereafter to more definite characters, or to the propriety of uniting them to *C. debilis*, between which variable species and *C. venusta* there is certainly a very inti-

* In a note to me he says: "It has never been found by any one, that I am aware of, but myself, and only in one small spot. I transplanted it into my garden, watched it for several years, but never could find mature achenia."

mate connection. The difference in the perigynium as to roughness or smoothness will hardly be insisted upon alone as constituting a specific distinction, since we find a palpable variation in this respect between the southern and northern forms of *C. striata*. Dewey alludes to the terminal spike of *C. venusta* being occasionally androgynous, female at top, and even to a second male spike. I have not observed either of these characters in the few specimens I have seen of this species, and the last is certainly anomalous in the group to which *C. venusta* belongs.

124. *C. arctata* (Boott); spicis 4–6 cylindricis gracilibus pallidis remotis pedunculatis, terminali mascula albida tenui erecta, reliquis foemineis linearibus laxifloris basi attenuatis sparsifloris, longe exserte setaceo-pedunculatis nutantibus; bracteis culmo brevioribus; stigmatibus 3, brevibus; perigyniis e basi obtusa ovato-ellipticis triquetris sensim acuminato-breve-rostratis, ore bidentato albo ciliato, leviter nervatis glabris membranaceis viridibus demum ferrugineo-punctatis stipitatis, squama ovata obtusa vel acuta cuspidata albida ciliata nervo viridi saepe scabro longioribus vel (cuspide) brevioribus.—*C. arctata*, Boott, *Fl. Bor. Am.* ii. 227; Carey, l. c. 527; *Sartwell, Exs.* n. 117. *C. sylvatica*, Dewey, l. c. x. 40 (non Huds.); Schw. et Tor. 350; *Tor. Mon.* 416. (TAB. CXXXV.)

HAB. In America septentrionali, in sylvis et pratis. Canada, Goldie, Todd. New England to New York, Carey.

Culmus 1–1½-ped., gracilis, superne setaceus, scaber, inferne foliatus, basi rudimentis foliorum atro-purpureis fibrillosis saepe scabriusculis tectus; pars spicas gerens 6–13 poll. longa. *Folia* 1–4 lin. lata, plana, graminea: *culmea* angustiora deorsum breviora, omnia culmo multum breviora: *radicalia* latiora, subrigida, eo saepe longiora. *Bractea* infima 1–1½ lin. lata, culmo brevior, longe vaginata: superiores setacea, spicis breviores. *Vagina* infima subinde 4 poll. longa. *Pedunculi* setacei, scabri: infimus saepe 3–6 poll. longus, longe exsertus. *Spica* mascula 6–13 lin. longa, $\frac{1}{2}$ – $\frac{2}{3}$ lin. lata, basi attenuata, pedunculata: foemineæ 1–3½ pollices longæ, 1–2 lin. latae, laxifloræ, basi flosculis remotiusculæ alternis attenuatae, nutantes: infima magis remota. *Squamæ* masculæ albæ, demum pallide ferrugineæ, nervo viridi, lanceolatae: inferiores laxæ, apice attenuatae vel cuspidatae, ciliatae: foemineæ ovatae, obtusæ vel acutæ: inferiores longius cuspidatae, ciliatae. *Perigynium* 1–1½ lin. longum, $\frac{6}{10}$ –1 lin. latum, basi obtusum, stipitatum, rarius rostro apice ad margines serrato. *Achenium* lineam longum, $\frac{6}{10}$ lin. latum, oblongo-triquetrum, basi styli apiculatum.

A *C. sylvatica*, Huds., differt, spicis laxifloris, gracilioribus; perigyniis nervatis, rostro breviori, etc.

I have never seen this species from any locality south of New York, or north of Canada. It was not found by the Arctic travellers. The ferruginous spots on the perigynium are more visible in some specimens than others, apparently depending on the maturity of the perigynium. I have frequently received it under the name of *C. flexuosa*, from which it is easily to be distinguished by the cuspidate female scales and the bidentate orifice of the shorter stipitate perigynium.

125. *C. linearis* (Boott); spica simplici androgyna apice mascula linearis elongata castanea basi attenuata laxiflora nuda; stigmatibus 3; perigyniis linearibus late rostratis obtusis subplano-convexis, ore albo membranaceo obliquo, enerviis, marginibus acutis recurvis serratis, pallidis superne castaneis racheolâ intus instructis, squama oblonga obtusa mutica vel hispido-cuspidata pallide

viridi apice margine albo-hyalina amplectente angustioribus longioribusque.—*C. Essenebeckii*, *Boott, Lin. Trans.* xx. (*spec. Edgeworth*) ; *non Kunth*. (TAB. CXXXVI.)

HAB. In Himalaya orientali alpina, ad Sikkim, alt. 12–15,000 ped., *J. D. Hooker*. In Monte Choor, *Edgeworth*. Gurhwal, *Strachey and Winterbottom*.

Cæspitosa. *Culmus* subpedalis, obtusangulus, sulcatus, laevis vel apice scabriuscus, firmus, basi foliatus, vaginisque foliorum reticulato-fissis tectus. *Folia* filiformia, involuta, marginibus scaberrimis, culmo longiora vel aequantia. *Spica* 1½–2½ poll. longa, 1–2 lin. lata; pars tertia vel quarta supercima mascula, laxiflora, basi attenuata. *Squamæ* masculæ obtusæ, muticæ: fœmineæ inferiores longius cuspidatae, infima quandoque bracteolam simulans: superiores subinde muticæ. *Perigynium* 3 lin. longum, ½ lin. latum. *Achenium* (cum stipe ¾ lin. longo) 1 ¾ lin. longum, ¾ lin. latum, longe ellipticum, pallidum. *Racheola* linearis, ligulata, serrata, vel in specimine altero magis maturo apice dilatata, ibique uno margine ferruginea, achenio brevior. *Stylus* latus, sulcatus, apie ferrugineus.

In the paper in the Linnean Transactions, vol. xx., I referred specimens of this species, given to me by Mr. Edgeworth, to *C. Essenebeckii*, Kunth (*C. trinervis*, Nees), but on comparing Mr. Edgeworth's with Dr. Hooker's more mature specimens, I find no difference between them, and the stigmata are three, not two. Dr. Royle's very few specimens, on which Nees founded his *C. trinervis*, are dioicous, and have plane, not involute, leaves. I have not met with any specimens from the later collections which I could refer to Nees's plant.

126. *C. Forsteri* (Wahlenberg); spicis 5–8 cylindricis pallidis, terminalibus 1–3 masculis, vel supra basi vel medio vel apice et basi mascula, spicula altera minore omnino mascula interdum ad ejus basin sita, reliquis (vel omnibus) androgynis ima basi masculis, superioribus apice sterilibus, approximatis, sessilibus, inferioribus remotis longe exserte pedunculatis demum pendulis longissime bracteatis, infima rarius basi composita; stigmatibus 3, brevibus; perigyniis triquetro-fusiformibus rostratis, bifidis vel bifurcatis nervatis arcuato-deflexis vel recurvatis pallidis saepe maculatis, squama lanceolata acuta hispido-cuspidata ferruginea medio trinervi viridi longioribus.—*C. Forsteri*, *Wahl. Act. Holm.* 154; *Schk. p. 44*; *Willd.* 248; *Kunth*, 502; *Hook. Fl. N. Zeal.* 285. *C. recurva*, *Schk. z. n. n. p. 120*. *C. debilis*, *Forster, Prod. (Herb. Banks)*. *C. latifolia*, *Solander, MSS. (Herb. Banks)*. *C. punctulata*, *Richard, Voy. Astrol. t. 22*. (TAB. CXXXVII.)

HAB. In Nova Zelandia. Charlotte Sound, “*C. debilis*,” Totaranui, “*C. latifolia*,” *Banks et Sol.* 1769, *Stephenson, Colenso (Herb. Hooker)*. Akawa, Raoul, n. 213.

Culmus 2-ped. vel altior, triqueter, validus, laevis, inter spicas scaber; pars spicas gerens 7–12 poll. longa. *Folia* 2–3 lin. lata, culmo longiora, carinâ, marginibus, et (supra) nervis albidis scabris. *Bractæ* inferiores vaginatae: infima saepc bipedalis, sursum decrescentes. *Vagina* infima 1½–2½ poll. longa. *Ligula* ferruginea. *Spicæ* pallidæ: masculæ 1–3: terminalis interdum 3½ poll. longa: reliqua minores: vel omnes basi masculæ 9 lin. ad 2½ poll. longæ, 3–5 lin. latæ, saepe, vel superiores solum, apice flosculis sterilibus instructæ. *Pedunculi* laeves vel scabriusculi: infimus 3–6 poll. longus. *Squamæ* lanceolatae, acuminatae, hispido-cuspidatae, ferrugineaæ, medio trinervi virido. *Perigynium* 2–2 ¾ lin. longum, ¾ lin. latum,

bifidum vel bifurcatum, laciniis scabris, crebre leviter nervatum, saepe punctis ferrugincis minimis conspersum, divergens vel arcuato-deflexum, vel demum recurvatum. *Achenium* stipitatum, ¾ lin. longum, ¼ lin. latum, triquetro-ovale vel obovatum, basi styli apiculatum, ferrugincum.

This species varies remarkably in the position of the male florets in the terminal spikes. The figure of *C. punctulata*, Rich., exhibits one terminal male spike, and that of Schk. N. three; and in the description of Wahlenberg two are mentioned, and in that of Solander two rarely three. In later specimens in Herb. Hooker, all the spikes are frequently male at base, or the terminal one male in the middle, while in Herb. Banks the *C. debilis* from Charlotte Sound has the terminal spike male at base, or at the base and apex, with a small male spike beneath. Solander does not allude to the basal male florets on the lower spikes, though they exist in all the specimens in Herb. Banks, nor does Richard in his *C. punctulata*. The perigynium is recurved only in the pendulous spikes, and the spots are only visible as it becomes mature. The orifice is bifid or ultimately bifurcate,—“apice bifurca,” *Sol. MSS.*

127. *C. Courtallensis* (Nees); spicis 4–5 androgynis apice subdimidiatim masculis linearibus elongatis remotis pallidis concoloribus, terminali nuda, inferioribus longe bracteatis vaginatis, infimis radicalibus brcve exserte pedunculatis; stigmatibus 3, brevibus; perigyniis ellipticis trigonis rostratis, ore obliquo bidentato, creberrime striato-nervosis, marginibus acutis ciliatis postice puberulis, squama late ovata acuta vel subrotunda obtusissima striato-nervata pallida margine albido-membranacea duplo longioribus.—*C. Courtallensis*, *Nees, MSS. in Herb. Arnott!* (TAB. CXXXVIII.)

HAB. In India Orientali. Courtallum, Penins. Ind. Or., *Wight*, n. 991! Aug. 1835.

Cæspitosa. *Radix* fibris pluribus lignosis. *Culmus* sesquipedalis, gracilis, erectus, acute triqueter, scabriuscus, basi foliis vaginantibus tectus. *Folia* 3–4 lin. lata, culmo longiora, plana. *Bractæ* breve vaginatae, longissimæ, 2–3 lin. latæ. *Vaginæ* 4–5 lin. longæ. *Spicæ* 1½–3 poll. longæ, 3 lin. latæ; pars staminifera 1–2½ poll. longa: infimæ radicales, breve exserte pedunculatae. *Squamæ* conformes: fœmineæ inferiores acutæ, superiores obtusissimæ: masculæ angustiores. *Perigynium* 3 lin. longum, 1 ¾ lin. latum. *Achenium* 1 ¾ lin. longum, 1 lin. latum, obovatum, trigonum, fuscum, angulis pallidum, punctulatum. *Stylus* insertus, articulatus, scabriuscus, basi triquetro-incrassatus. *Stamina* 3, brevia. *Stigma* 3, brevia.

Variat, spicâ radicali (in uno specimine) basi spiculâ alterâ minimâ acuta.

Var. β . *angustifolia*.

Gracilior. *Spicæ* 2–3, subpollicares, lineam latæ. *Folia* 1–2 lin. lata.

Pulmy Mountains, *Wight*, n. 3175. Moflung, *J. D. Hooker*.

An a *C. speciosa*, Kunth, distincta? Differt, spicis 4–5, culmeis, alternis, longioribus, apice conspicue masculis, inserte et breve exserte pedunculatis; perigyniis majoribus, postice plane pilosiusculis; culmo validiori; foliis minus longe acuminatis.

I have adopted the name which I find given to this plant by Nees in *Herb. Arnott*, and which is noticed by Drejer in his ‘Symbolæ,’ p. 25; but notwithstanding the striking difference between it and the *C. speciosa*, Kunth, I have strong doubts as to its specific distinction. Neither Nees nor Kunth appear to have seen specimens of *C. speciosa* like those in Wallich's herbarium, and I add a description of them, that Indian botanists may have their attention directed to the peculiar characteristics of the Raje-

mahl plant, which, if found to be permanent, will undoubtedly sufficiently serve for a specific difference.

128? *C. speciosa* (Kunth); spicis androgynis apice masculis pallidis concoloribus pollicaribus 1-4 ex eadem radice, vel in pedunculos inaequales graciles longos radicales monostachyos, vel in culmum distachyum (infima subradicali vaginata exserte pedunculata bracteata) insidentibus; stigmatibus 3, brevibus; perigyniis ellipticis acute trigonis basi acutis rostratis bilobis creberrime striato-nervosis marginibus ciliatis glabris vel postice superne puberulis, squama late ovata acuta cuspidata vel subrotunda obtusa striato-nervosa pallida subduplo longioribus.—*C. speciosa*, Kunth, 504. *C. concolor*, Nees (non Brown). *C. peduncularis*, Wallieh, in Herb.!

HAB. In India Orientali. In mont. Rajemahl, Wall. n. 3391.

Radix fibrosa. *Culmus* pedalis, gracillimus, acute triquetus, apice seabriuscus, basi foliosus. *Pedunculi* radicales, 6-12 poll. longi. *Folia* 2-3 lin. lata, plana, apice longe setaceo-acutissima, culmo subduplo longiora. *Spicae* 12-15 lin. longae, 2 lin. latae; pars tertia suprema mascula; nudae vel e squamæ infimæ cuspidata elongata, quasi bracteatae: infima e suprema 9 poll. remota, vagina 3 lin. longa, pedunculo bipollucari, bracteaque triplo longiori instructa: aliæ 1-2 in pedunculos monostachyos insidentes. *Squamæ* conformes: masculæ subacutæ: fœminea infima plus minus cuspidata: superiores subrotundæ, abrupte apiculatae vel obtusæ. *Perigynium* 2½ lin. longum, 1 lin. latum, bilobum, lobis obtusis ciliatis. *Achenium* 1-2 lin. longum, 1 lin. latum, perigynio conforme. *Stylus* insertus, scaber, basi triquetra incrassatus, articulatus. *Stamina* 3, brevia. *Stigmata* 3, brevia.

Nees and Kunth make no mention of the long monostachyous peduncles which suggested to Wallich the name of *C. peduncularis* for this species. On the ticket affixed to his specimens in the East Indian Herbarium at the Linnean Society he says, "Reperi in mont. Rajemahl, Aug. 8, 1820."

129. *C. fascicularis* (Solander); spicis 3-5 cylindricis pedunculatis, terminali maseula rarius basi mascula, reliquis fœmineis saepe apice sterilibus demum nutantibus vel pendulis, omnibus approximatis evaginatis, vel infima remota longissime exserte pedunculata; bracteis inferioribus longissimis; stigmatibus 3; perigyniis ovatis longe stipitatis cylindrico-rostratis obtuse trigonis bienspidatis glabris costato-nervosis divergentibus demum recurvatis, squama lanceolata longe hispido-aristata medio exasperata serrata demum ferruginea longioribus vel (*aristæ*) brevioribus.—*C. fascicularis*, Solander, MSS. (Herb. Banks); Flora of New Zealand, Hooker, i. 283. *C. Pseudo-cyperus*, Brown, Prod. (TAB. CXXXIX. et CXL.)

β . *minor*.—“ Spicæ 4, una maseula, tres fœmineæ, subæquales, erectæ, sessiles; superiores, scilicet mascula et duæ fœmineæ, subfasciculatae, ae si ex uno eodemque centro prodeentes.”—Solander.

HAB. New Zealand, Banks et Solander, etc. Australia, Brown. Tasmania, Gunn, J. D. Hooker.

Culmus 2-ped., validus, triquierter, scaber. *Folia* 2-4 lin. lata, culmo longiora, reticulato-nodosa. *Bractæ* inferiores longissimæ: infima quandoque plus minus vaginata. *Pedunculi* scabri, longitudine variabilis: infimus interdum 1 vel 5 poll. longus. *Spica mascula* 1-3 poll. longa, 2-3 lin. lata. *Spicae fœmineæ* 1-3½ poll. longæ, 4-6 lin. latæ. *Squamæ* mas-

culæ majores: fœmineæque inferiores ciliato-serratae, longe hispido-aristatae: superiores saepe perigynio breviores. *Perigynium* (cum stipite $\frac{5}{10}$ - $\frac{6}{10}$ lin. longo) 3-3½ lin. longum, $\frac{8}{10}$ lin. latum, ovatum, obtuse triquetrum, sensim in rostrum cylindricum elongatum attenuatum. *Achenium* $\frac{8}{10}$ lin. longum, $\frac{6}{10}$ latum, obovatum, triquetrum, basi styli contorta apiculatum, castaneum, punctulatum.

Habitus et aspectus *C. Pseudo-cyperi*, L. Differt, spica mascula latiori, fœminæ saepe apice sterilibus, squamis majoribus; perigyniis ovatis (nec lanceolatis), longe stipitatis, rostro longiori; achenio obovato.

In Dr. Hooker's 'Flora of New Zealand' I adopted Solander's name for this plant, though, as the quotation given above from his character shows, it applies to the smaller form of it only. Its mature perigynium constitutes the chief distinction between it and the European *C. Pseudo-cyperus*. In Tab. CXL. the smaller figure, β , *minor*, represents the plant of Solander.

130. *C. formosa* (Dewey); spicis 4 rarius 3-5 oblongis densifloris pallidis demum olivaceis, terminali basi *subdimidiatum* reliquis ima basi *paree* masculis, remotis nutantibus longe exserte setaceo-pedunculatis; bracteis eulmum subæquantibus; stigmatibus 3, brevibus; perigyniis triquetris ovalibus ventricosis rostellatis, ore integro vel emarginato ciliato, tenuiter nervatis pellucide demum ferrugineo-punctatis, squama ovata acuta vel obtusa breve cuspidata castanea margine albo-hyalina nervo viridi scabro latioribus longioribusque; culmo foliisque pilosis.—*C. formosa*, Dewey, Sill. viii. 98; Sehw. et Tor. 325; Carey, l. e. 522; Sartwell, Eas. n. 86: non Kunth (descript.), 430, quæ *C. Shortii*, Tor. (TAB. CXLI.)

HAB. In Ameria septentrionali, in pratis humidis, New England to New York.

Culmus, *folia (infra)*, *vaginæ* pedunculique pilosi. *Culmus* 1-3-ped., superne setaceus, basi rudimentis foliorum fibrillosis purpureis tectus; pars spicas gerens 5-9 poll. longa. *Folia* 1-3 lin. lata, culmo breviora. *Bractea* infima culmo brevior. *Vagina* infima 1½-3 poll. longa. *Pedunculus* infimus 3½-5 poll. longus. *Spicae* 4-12 lin. longæ, 2 lin. latæ, omnes basi masculæ. *Squamæ* pallide castaneæ, margine albo-hyalinæ: masculæ longiores, rarius apice ciliatae; inferiores obtusæ, multæ; superiores saepe micronulate: fœmineæ ovatae, nervo viridi, breve cuspidatae. *Perigynium* 2½-3 lin. longum, lineam latum, glabrum vel rarius apice ad margines parce denticulatum. *Achenium* 1-2 lin. longum, $\frac{8}{10}$ lin. latum, triquetro-obovatum, castancum, basi styli apiculatum.

Neither Dewey nor Torrey notice the male florets at the base of the lower spikes, a character which distinguishes this species from all its allies.

131. *C. oxylepis* (Torrey); spicis 4 rarius 3-5 cylindraceis gracilibus subdensifloris olivaceis, terminali basi mascula, reliquis fœmineis approximatis exserte pedunculatis suberectis basi attenuatis laxifloris, infima plus minus remota; bracteis culmum subæquantibus; stigmatibus 3; perigyniis elliptico-lanceolatis triquetris utrinque acutis vel rostellatis, ore emarginato bidentato, tenuiter nervatis glabris olivaceis ferrugineo punctatis, squama lanceolata acuminata acuta cuspidata albida nervo viridi scabro latioribus longioribusque; culmo foliisque pilosis.—*C. oxylepis*, Torrey, Mon. 409 (1836); Dewey, Sill. iii. 354 (1847). (TAB. CXLII.)

HAB. In Ameria septentrionali. Texas, Drummond. Florida, Dr. Chapman.

Culmus, folia (*infra*), vaginæ pedunculique pilosi. *Culmus* $1\frac{1}{2}$ - $2\frac{1}{2}$ -ped., gracilis, foliis vaginantibus munitus, basi rudimentis foliorum purpureis teetus; pars spicas gerens 3-10 poll. longa. *Folia* $1\frac{1}{2}$ -2 lin. lata, culmo breviora. *Bracteæ* vaginatæ: infima culmum subæquans vel eo brevior. *Vagina* infima 1-3 poll. longa. *Pedunculi* omnes exserti, setacei: infimus 1- $3\frac{1}{2}$ poll. longus. *Spicæ* 8-18 lin. longæ, $1\frac{1}{2}$ -2 lin. lateæ: terminalis semper basi subdimidiatis maseula; fœmineæ alternatim approximatæ: infima 1-5 poll. remota. *Squamæ* albæ, nervo viridi: maseulæ lanceolatae, laxæ, acuminatae, acutæ: inferiores vel superiores euspidatae: fœmineæ inferiores longius euspidatae, perigynium saepe subæquantes vel eo longiores. *Perigynium* $1\frac{8}{10}$ - $2\frac{1}{10}$ lin. longum, $\frac{6}{10}$ - $\frac{7}{10}$ lin. latum. *Achenium* $\frac{8}{10}$ - $\frac{9}{10}$ lin. longum, plus $\frac{6}{10}$ lin. latum, ovale, triquetrum, stipitatum, pallidum, punetatum.

Allied to *C. formosa*, but differing from it in the female lower spikes, etc.

132. *C. Davisii* (Torrey); spicis 3-4 rarius 2-5 cylindricis vel oblongis crassiusculis pedunculatis pallidis, terminali basi rarius omnino mascula, reliquis fœmineis approximatis, superioribus saepe evaginatis, erectis, inferioribus basi laxifloris subinserte vel plus minus exserte pedunculatis, infima saepe subremota nutanti; bracteis culmo longioribus; stigmatibus 3 brevibus; perigyniis ellipticis turgide ventricosis rostratis, ore emarginato bidentato, rostro ad margines saepe scabro, tenuiter nervatis pellueide demum ferrugineo-punctatis flavescenti-viridiibus, squama ovata aeuta vel obtusa saepe truncata vel emarginata albida medio viridi nervata longe valideque cuspidata latioribus longioribus vel (*eupidem*) subæquantibus; culmo foliisque pilosis.—*C. Davisii*, *Schw. et Tor.* *l. e.* 326; *Carey*, *l. e.* 522; *Sartwell*, *Eas. n.* 85. *C. aristata*, *Dewey*, *Sill. vii.* 277 (*non Brown*). *C. Torreyana*, *Dewey*, *Sill. x.* 47. *Carex*, *n.* 46, *Muhl. l. e.* 254. (TAB. CXLIII.)

HAB. In America septentrionali, in pratis humidis. New England to Ohio and Illinois.

Culmus, folia (*infra*), vaginæ pedunculique pilosi. *Culmus* 1- $2\frac{1}{2}$ -ped., firmus, foliis vaginantibus munitus, basi rudimentis foliorum purpureis fibrillosis teetus; pars spicas gerens 2-8 poll. longa. *Folia* $1\frac{1}{2}$ -3 lin. lata: superiora saepe culmo longiora. *Bracteæ* inferiores vaginatæ, culmo subinde multum longiores. *Vagina* infima $\frac{1}{2}$ - $2\frac{1}{2}$ poll. longa: superiores breves vel obsoletæ. *Pedunculi* saepe inserti, vel inferiores plus minus exserti: infimus 2- $2\frac{1}{2}$ poll. longus. *Spicæ* 8-20 lin. longæ, 2- $2\frac{1}{2}$ lin. latæ, omnes subæquatae, eretæ, vel infima 2-4 poll. remota, nutans: summa rarius omnino, plerumque subdimidiatis basi maseula. *Squamæ* albæ, medio viridi, plus minus euspidatae, maseulæ lanceolatae: fœmineæ ovatae: inferiores acutæ, longius euspidatae; superiores obtusæ, saepe subtruncatae vel emarginatae. *Perigynium* $1\frac{3}{10}$ - $\frac{8}{10}$ lin. longum, 1- $1\frac{3}{10}$ lin. latum. *Achenium* $1\frac{3}{10}$ lin. longum, $\frac{7}{10}$ lin. latum, ovale, utrinque acutum, triquetrum, stipitatum, basi styli apiculatum, flavidum, punetatum.

I have never met but with one specimen, among very many in which the terminal spike was entirely male, but Muhlenberg and Torrey allude to such as having been observed by them. Muhlenberg describes the stigmas as two or three. I have never seen less than three. The upper leaves and sheaths in the Illinois specimens are occasionally glabrous.

The broader spikes, more ventricose perigynium, and larger cuspidate scales, distinguish this species from its allies. It is more common than *C. formosa* or *C. oxylepido*.

133. *C. æstivalis* (Curtis); spicis 4 rarius 3-5 cylindricis

anguste linearibus laxifloris erectis olivaceis demum castaneis, terminali basi maseula, reliquis fœmineis approximatis evaginatis, superioribus subsessilibus vel infima remota bracte vaginata exserte pedunculata basi dissitiflora; stigmatibus 3; perigyniis oblongo-ovalibus utrinque acutis triquetris, ore integro, tenuiter nervatis olivaceis ferrugineo-punctatis, squama ovato-lanceolata acuta cuspidata vel obtusa mutica castanea margine pallida latioribus longioribusque; foliis inferioribus vaginisque pilosis.—*C. æstivalis*, *Curtis*, *Gray*, *Sill.* xlvi. 28 (1841); *Dewey*, *Sill.* iii. 172, et iv. 347; *Carey*, 522; *Curtis*, *Sill.* vii. 410; *Tuck. En.* 15; *Kunze*, *Riedgr.* 112. *t.* 28; *Darlington*, *Fl. Cest. ed.* 3. 349. *C. Darlingtonii*, *Schweinitz*, *Herb.* *C. tabularia*, *Curtis*, *MSS.* (*Herb. Turrey*.) *C. Rugeliana*, *Kunze*, *l. e.* 189. *t.* 48. (TAB. CXLIV.)

HAB. In America septentrionali, in montibus. Pokono Mountain, Pennsylvania, *Dr. Darlington and Mr. Townsend*, June, 1828. West Chester, Pennsylvania, on Slaty Hills, *Townsend*. Table Mountain, North Carolina, *Curtis*. In montibus altioribus Carolinæ Septentrionalis, passim, *Dr. Gray et Mr. Carey*, 1841. In montibus Tennessee, *Rugel*, 1842.

Folia inferiora (*utrinque*) braeteæque ad margines vaginæque pilosæ. *Culmus* 1-2-ped., setaceus, seaber, basi foliatus, foliisque vaginantibus munitus; pars spicas gerens 1-4: vel 9 poll. longa. *Folia* 1- $1\frac{1}{2}$ lin. lata, graminea: *radicalia* culmo longiora: *culmea* eo breviora: inferiora juvenilia utrinque pilosa, omnia basi ad margines ciliata: demum omnino glabra evadunt. *Bracteæ* infima culmo longior, foliacea, basi ad margines ciliata: reliqua setacea, breviores. *Vaginæ* foliorum pilosæ: ea braeteæ inferioris saepe obsoleta, vel 1-8 lin. longa, glabra vel intus apice pilosuseula. *Pedunculi* setacei, seaber: infimus 3-18 lin. longus. *Spica terminalis* sessilis, basi saepe subdimidiatis maseula, 9-20 lin. longa. *Spicæ fœmineæ* 5 lin. ad 2 poll. longæ, 1 lin. latæ, eretæ: superiores sessiles vel subsessiles: omnes evaginatae, approximatæ, vel infima 2-3 rarius 6 poll. remota, breve vaginata, basi floreulæ alternis disstis attenuata. *Squamæ* pallide eastanæ: maseulæ majores, obtusæ, muticæ, vel inferiores acutæ, euspidatae: fœmineæ inferiores ovato-lanceolatae, acutæ, euspidatae; superiores obtusæ, muticæ vel mueronatae. *Perigynium* $1\frac{5}{10}$ - $\frac{7}{10}$ lin. longum, $\frac{4}{10}$ - $\frac{5}{10}$ lin. latum, utrinque (præsertim plene maturum) acutum, achenium arete vestiens. *Achenium* $\frac{9}{10}$ lin. longum, $\frac{4}{10}$ lin. latum, ellipticum, stipitatum, basi stylis apiculatum.

A *C. oxylepido* differt, culmo setaceo; foliis inferioribus utrinque vaginisque solum pilosis; spicis gracilioribus, laxifloris; perigyniis minoribus, erostratis, ore integro; squamis saepe muticis.

A *C. gracillima* differt, culmo setaceo; spicis laxifloris, eretis, evaginatis vel infima breve vaginata; perigyniis utrinque acutis, nec ventricosis; squamis longioribus; foliis angustioribus, vaginisque pilosis.

Dr. Darlington, in company with Mr. Townsend, discovered this well-marked species in 1828, on the Pokono Mountain, Pennsylvania, and M. Schweinitz named it after him, but omitted to publish it. Mr. Curtis (I believe subsequently) found it on the Table Mountain, North Carolina, and his description of it is given by Dr. Gray (*Sill. Journ.* xlvi. 28) in his interesting account of the excursion he made with Mr. Carey, in 1841, to the mountains of that State. Kunze (*t.* 28) has given a good figure of it. I have referred his *C. Rugeliana* (*t.* 48) to it, on the authority of specimens which he sent to Sir W. J. Hooker under that name, and which included *C. æstivalis*, mixed with *C. debilis*, and a *Carex* which I referred in the paper in vol. xx.

of the Linnean Transactions, p. 116, to the *C. juncea*, Willd. This last has always a terminal male spike, and a nerveless perigynium, the upper margins of which are hispid, and is identical with the *C. miser* of Buckley. Kunze describes *C. Rugeliana* with the terminal spike male or androgynous; his figure (t. 48), showing the androgynous spike, and a smooth perigynium, which from the specimens sent to Sir W. J. Hooker as *C. Rugeliana*, I refer to *C. aestivialis*. Whether the other species, with the male spike and hispid perigynium, be the *C. juncea* of Willdenow I have no precise means of knowing, as I have not seen authentic specimens of that plant, but it agrees generally with the description of it given by Kunth and Link. That Kunze had no definite conception of his *C. Rugeliana*, the mixed specimens sent to Sir W. J. Hooker under that name would prove; and that he confounded *C. arctata*, or some allied species, with *C. gracillima*, is evident, from his ascribing a rostrate perigynium to the last, both in his description and figure of it.

In 23 specimens I find—

20 with 4 spikes. The terminal spike male at base.
3 „ 5

134. *C. gracillima* (Schweinitz); spicis 4–5 rarius 3–6 gracilibus cylindricis oblongis vel elongatis densifloris pedunculatis viridibus demum olivaceis, terminali basi rarius omnino mascula, reliquis foemineis saepe pendulis, superioribus approximatis, inferioribus remotis longe exserte setaceo-pedunculatis basi laxifloris interdum compositis, infima saepe longissime vaginata; bracteis culmum subaequantibus vel eo brevioribus; stigmatibus 3; perigyniis oblongo-ovalibus vel obovatis obtusis turgidis trigonis, ore integro, nervatis olivaceis vel ferrugineis, nervis pallidioribus pellucide demum ferrugineo-punctatis, squama albida nervo viridi oblonga obtusa abrupte brevi-cuspidata vel mutica rarius acuta latioribus longioribusque.—*C. gracillima*, Schw. An. tab.; Dewey, Sill. viii. 98; Tor. Mon. 408; Carey, l. c. 522; Sartwell, Evs. n. 87; Kunth, 454; Kunze, 36. t. 8 (ex parte); Darlington, Fl. Cest. ed. 3. 349. *C. digitalis*, Schw. et Tor. 324. t. 27. f. 1 (non Willd.); Beck, Bot. 436. (TAB. CXLV.)

HAB. In America septentrionali, in pratis humidis. Norway House, Richardson. New England to Michigan, Carey.

Culmus 1–2½-ped., gracilis, apice setaceus, scaber, foliis vaginatis munitus, basi rudimentis foliorum purpureis fibrillosis teetus; pars spicas gerens 5–9 etiam 21 poll. longa. *Folia* 1–4 lin. lata, culmo breviora, graminea, vaginæque glabrae. *Bractea* infima foliacea, 1–1½ lin. lata, eulum subaequans vel eo brevior: superiores setacea. *Vagina* infima 1–4½ poll. longa. *Pedunculi* capillares, seabri: infimus 2–5½ poll. longus. *Spicæ* omnes pedunculatae, 8 lin. ad 2 poll. longæ, 1–2 lin. latæ: terminalis rarius omnino plerumque basi plus minus maseula: foemineæ superiores approximatæ, inferiores remotæ, omnes, nisi summa, vaginatæ, demum pendulæ: infima basi laxiflora. *Squamæ* albæ, nervo viridi demum eastaneo: maseulae inferiores, laxæ, lanceolatae, acutæ, superiores obtusæ: foemineæ oblongæ, obtusæ, abrupte euspidatae; vel inferiores acutæ, superiores saepe muticæ vel mucronulatae. *Perigynium* 1–5–7 lin. longum, 6–8 lin. latum. *Achenium* 9 lin. longum, 5–6 lin. latum, triquetro-ovale vel obovatum, basi styli apiculatum, flavidum, punetatum.

A *C. aestivalis* differt, eulmo validiori; foliis latioribus; spicas longioribus, longe pedunculatis, demum saepe pendulis, inferioribus longe vaginatis; perigyniis obtusis, turgidis; squamis abrupte euspidatis: foliis vaginisque glabris.

This species varies in the breadth of the spikes, in their being more or less loosely flowered, more or less pendulous; in the

degree of obtuseness of the perigynium, the distinctness of the nerves, and the form and proportionate length of the scales. The male terminal spike is exceptional. I have observed it only in specimens out of sixty-five.

I have quoted Kunze's f. 8, as it evidently represents this species, though in the details, at *f* and *g*, and in his description "utriculis rostratis, rostro bidentato," he confounds probably *C. arctata* with it.

In 65 specimens I find—

1 with 3 spikes.	3 terminal spike male.
27 „ 4	62 terminal spike male at base.
36 „ 5	
1 „ 6	

In one the two lowest spikes compound at base, the lowest having three short branches.

In one the lowest compound at base, with an elongated branch.

135. *C. sterilis* (Willdenow); spicis polygamis e spiculis 4–5 rarius 6 nudis contiguis dioicis, masculis vel rarius foemineis, plerumque androgynis basi vel apice, vel apice et basi masculis, vel superioribus masculis, inferioribus foemineis vel androgynis; spiculis masculis oblongis, foemineis androgynisque subrotundis, infima saepe oblonga pluriflora, summa reliquisque androgynis plerumque basi parce masculis; stigmatibus 2; perigyniis e basi utrinque tenui arguta cordatis sensim rostratis acute bifidis antice alte sectis plus minus nervatis superne marginibus acutis serratis compressis divergentibus vel inferioribus recurvatis, squama ovata castanea margine albo-hyalina acuta vel cuspidata paulo longioribus vel subaequantibus.—*C. sterilis*, Willd. iv. 208; Schk. f. 146 (*optima*); Muhl. 217; Schw. et Tor. 293; Dewey, xi. 304; Elliott, ii. 525; Sartwell, Exs. n. 37. *C. stellulata*, β, Tor. Mon. 392. *C. stellulata*, var. *sterilis*, Carey, 515. (TAB. CXLVI.)

HAB. In America septentrionali. Canada to Carolina.

Cæspitosa. *Radix* fibrosa: fibris tenuibus minime lignosis. *Culmus* 9–14 poll. altus, rigidus, seaber, basi rudimentis foliorum vaginisque obseure ferrugineis teetus. *Folia* involuta, quædam setacea, vel alia ½, demum senilia evoluta lineam lata, eulmo breviora vel longiora. *Spicæ* ex eadem radice distributione florum admodum variables: saepe omnino masculæ, rarius tote foemineæ, saepius androgynæ, basi paree vel apice vel apice et basi masculæ: vel spiculæ superiores masculæ: inferiores foemineæ vel androgynæ. *Spiculae* 4–5, rarius 6, plerumque contiguae, nude: infima tantum subinde subremota: masculæ pallide eastaneæ, 4–6 lin. longæ, 1 lin. latæ: foemineæ vel androgynæ (summa nusquam vel rarissime basi attenuato-maseula) subrotundæ, 3 lin. longæ et latæ, vel infima pluriflora, 4 lin. longa, nuda, rarius braetca spicâ suâ longiori. *Squamæ* eastaneæ, margine albo-hyalinæ, acutæ: in spicis foemineis vel androgynis inferiores acutæ, nervo infra apicem evanescente: superiores acutissimæ, euspidatae, perigynium æquantes. *Perigynium* 1–5–7 lin. longum, 6–8 lin. latum, compressum, basi utrinque marginibus tenuibus argutis, eordatum, acute bifidum, superne e medio serratum, demum olivaceum vel ferrugineum, divergens, apice reeturvum vel ad basin spicæ omnino reeturvatum, utrinque nervatum, nervis postice paucioribus. *Achenium* 9 lin. longum, 6 lin. latum, suborbiculatum, basi productum, basi styli crassiori abrupte apiculatum.

A *C. stellulata*, Good., differt, inflorescentia polygama; spiculis pluribus, plurifloris, summa vix unquam basi attenuato-maseula; perigyniis ad basin marginibus tenuibus argutis eompressis eordatis, acute bifidis, nervis paucioribus, magis remotis; squamis acutissimis, euspidatis, perigynia saepe æquan-

tibus; foliis involutis, angustioribus, pallidioribus; culmo altiori; radice fibris tenuioribus.

Var. β ; spica straminea concolori, e spiculis oblongis plurifloris 4–6 androgynis, terminali inferne longe attenuata, reliquis *ima basi* masculis; culmis 15–24-poll., ex eadem radice pluribus cæspitosis.—*C. sterilis*, *Muhl.*, var. *d*. *C. stellulata*, *Tuck. etc.*; *Sartwell, Exs. n. 35.* (TAB. CXLVI*.)

I agree with Tuckerman in considering *C. sterilis* to have specific characters distinguishing it from *C. stellulata*, Good., which plant Muhlenberg has not included among the American species of the genus. His var. *d*. is generally referred to it, but it differs in having more spiculae, which are oblong, with more numerous flowers, a taller culm, and cordate perigynium. As in the case of *C. ampullacea*, Good., I have not seen specimens which I can satisfactorily refer to the European *C. stellulata*, south of the British provinces of North America. Willdenow says the habit of *C. sterilis* is that of *C. curta*, Good. (*C. canescens*, L.). I think Schlechtendal explains this, for in the Linnaea he says a specimen of *C. canescens* from Muhlenberg is in Herb. Willd. united with *C. sterilis*, also from Muhlenberg.

In Tab. CXLVI. are figured mature perigynia of *C. siccata*, referred to under that species, p. 19.

136. *C. stellulata* (Good.) var. *scirpoides*; spica oblonga, e spiculis 2–4 approximatis vel contiguis androgynis, terminali basi saepe longe attenuato-mascula recta vel obliqua, reliquis subrotundis paucifloris basi parce masculis nudis; stigmatibus 2; perigyniis c basi truncata vel cordata spongiosa ovatis rostratis bidentatis superne marginibus serratis plano-convexis antice nervatis patentibus, squama subrotunda obtusa pallide ferruginea margine albo-membranacea subduplo longioribus.—*C. stellulata*, var. γ , *Tor. Mon.* 392; var. *scirpoides*, *Carey*, 515. *C. scirpoides*, *Schku. f.* 180; *Willd.* 237; *Kunth*, 400; *Muhl.* 225; *Schw. et Tor.* 317; *Dewey*, *Sill.* viii. 96; *Sartwell, Exs. n. 36.* (TAB. CXLVI**.)

HAB. In America septentrionali.

Culmus 9–18-poll., gracillimus, sursum scaber, saepe ut folia fere setacea, debilia. *Spica* 6–10 lin. longa: spicula terminalis quandoque omnino sterilis. *Perigynium* $1\frac{2}{10}$ – $\frac{3}{10}$ lin. longum, $\frac{6}{10}$ – $\frac{7}{10}$ lin. latum, inferne marginibus spongiosis. *Achenium* $\frac{6}{10}$ lin. longum, fere $\frac{5}{10}$ lin. latum.

The thickened basal margins of the perigynium distinguish this plant from *C. sterilis*. It can scarcely be regarded as distinct from *C. stellulata*, though the European form is more rigid, with a shorter culm, longer and acuter scales, and a larger and often an oval-based perigynium.

137. *C. radicalis* (Boott); spicis androgynis apice masculis pallidis concoloribus parvis paucifloris ovatis nudis 2–5 ex eadem radice, vel in peduncilos graciles inaequales plus minus elongatos radicales monostachyos vel in culmum 2–3-stachyum insidentibus, inferioribus remotis longe exserte pedunculatis bracteatis, infima radicali; stigmatibus 3; perigyniis late ovalibus triquetris basi alatis rostellatis emarginatis pubescentibus, marginibus usque ad basin ciliatis nervatis lutescentibus (rachelatae saepe instructis), squama ovata acuta plus minus longe cuspidata longioribus vel (ad basin spicæ cuspide) saepe multum brevioribus. (TAB. CXLVII.)

HAB. In Himalaya orientali temperata, ad Sikkim, alt. 9–10,000 ped., *J. D. Hooker*.

Culmus subpedalis. *Pedunculi* 6–12 poll. longi, filiformes,

apice cernui, infra spicas clavati, angulis acutis scabris, basi reliquis foliorum filamentosis atris tecti. *Folia* 1– $1\frac{1}{4}$ lin. lata, plana, culmo saepe longiora. *Bractea* spicæ mediæ vaginata, foliacea, culmo longior. *Vagina* 2–6 lin. longa. *Spicæ* 3 lin. longæ, $2\frac{1}{2}$ lin. latæ, apice flosculis masculis pluribus imbricatis basi foemineis 4–7 instructæ: spica media 2–6 pollices remota, longe exserte, infima radicalis brevius pedunculata. *Squamæ* pallidæ, concolores: masculæ obtusæ, muticæ, saepe ciliolatae: foemineæ plus minus longe setacco-cuspidatae; inferiores saepe bracteas simulantes. *Perigynium* $1\frac{8}{10}$ lin. longum, $\frac{8}{10}$ lin. latum, saepe racheola linearis scabra instructum. *Achenium* $1\frac{2}{10}$ lin. longum, $\frac{7}{10}$ lin. latum, turgide ovatum, stipitatum, trigonum, angulis 3 prominentibus pallidioribus, faciebus convexis: ferrugineum, punctulatum. *Stylus* basi insigniter in-crassatus, articulatus, deciduus. *Stigmata* 3, contorta.

Affinis *C. speciosa*, Kunth. Differt spicis parvis, ovatis, paucifloris; perigyniis minoribus, emarginatis, scabrioribus; foliis angustioribus; culmo pedunculisque filiformibus.

M. Spach remarks that the prominent angles of the achenium do not always correspond to the real angles of it, deviating a little to the right or left, though all meeting at the base of the conic in-crassate style. On some roots all the spikes are solitary, on others they are alternate on a culm; confirming Drejer's idea that the *Psyllophoræ* are "formæ hebetatæ Caricum genuinarum."

138. *C. parva* (Nees); spica simplici androgyna apice mascula purpureo-ferruginea concolori oblongo-elliptica nuda; stigmatibus 3; perigyniis linear-lanceolatis triquetris longe sensim acuminato-rostratis, ore integro obliquo, leviter nervatis ferrugineis demum reflectis racheolâ linearis intus instructis, squama lanceolata acuta mutica vel longe hispido-cuspidata purpureo-ferruginea marginibus demum albo-membranaceis decidua angustioribus brevioribus longioribusque.—*C. parva*, *Nees*, *Wight, Contr.* 120 (1854). *C. macrorhyncha*, *Kar. et Kir. Bull. Soc. Imp. Moscow*, n. 3. 521 (1842)! (TAB. CXLVIII.)

HAB. In Himalaya temperata. Kunawur ad Yuerpo, in sylvis, *Jacquemont*, n. 484. Sikkim, alt. 12,000 ped., *J. D. Hooker*. Mourn, *Royle*, n. 138. In humidis subalpinis. Alatau, ad fluv. Sarchan, *Karelin et Kirilow*.

Radix repens. *Culmus* 1–2-ped., subvalidus, laevis. *Folia* $\frac{1}{2}$ – $\frac{3}{4}$ lin. lata, subulata, canaliculata, laevia, culmo breviora. *Spica* 8 lin. longa, sub-2 lin. lata, basi flosculis foemineis 2–8 apice masculis pluribus imbricatis instructa. *Squamæ* lanceolatae: masculæ acuminate, acutæ: foemineæ inferiores cuspidatae; infima spicam subæquante: superiores muticæ. *Perigynium* 4 lin. longum, $\frac{1}{2}$ lin. latum. *Achenium* $1\frac{1}{2}$ lin. longum, $\frac{4}{10}$ lin. latum, longo-ellipticum, triquetrum, pallidum, rachelatae 3 lin. longa lincari-ligulata ciliata antice instructum.

Affinis *C. pauciflora*, Light.

The few specimens of this species found by Dr. Royle were too young to exhibit the reflexed perigynium. I have figured one of them (the smallest figure with two leaves), the other figures being from Dr. Hooker's specimens. I have no hesitation in referring *C. macrorhyncha* to the plant of Nees, though it is described as having only two stigmata. An authentic specimen in Herb. Banks has three stigmata; and M. Spach informs me the same number are observable in the specimens in the Herb. Mus. Paris.

139. *C. olivacea* (Boott); spicis 6–8 vel pluribus (14) fuscis cylindricis elongatis erectis, terminalibus 2 masculis ferrugineis, vel apice masculis, aliis 2–3 minoribus masculis proxime sitis, reliquis foemineis fusco-olivaceis concoloribus, superioribus (vel omnibus) apice masculis alternatim approximatis evaginatis, infima remota lon-

gissimc bractcata sæpe inserte vel longe exserte pedunculata; stigmatibus 3; perigyniis turgide ovalibus ventricosis rostratis, rostro plerumque deflexo, ore ferrugineo cmarginato-bidcntato dcmum bilobato, leviter nervosis rugosis divaricatis, squama lanceolata obtusa vel acuta euspidata ferruginea nervo pallido latioribus longioribus vel (*cuspide*) brevioribus.—C. olivacea, *Boott, Lin. Trans.* xx. 138. (TAB. CXLIX.)

HAB. In Assam tropica, *Jenkins*, et Himalaya tropica ad Sikkim, alt. 1–2000 ped., *J. D. Hooker*.

Culmus 2–3-ped., validus, triquetcr, laevis, superne gracilis, scaber; pars spicas gerens 7–18 poll. longa. *Folia* 5–8 lin. lata, culmo longiora. *Bractea* infima sæpe vaginata, 3–6 lin. lata, subinde tripedalis: superiores evaginatae, angustæ, demum spicis suis breviores. *Vagina* $\frac{1}{2}$ –2 poll. longa, intus atro-purpura. *Ligula* elongata, alligata. *Pedunculus* infimus $\frac{1}{2}$ –7 poll. longus, validus, laevis. *Spicæ masculæ* 2: terminalis $2\frac{1}{2}$ –6 poll. longa, 2 lin. lata; altera subpollicaris, sessilis, arcte ad ejus basin sita, ferruginea: vel spicæ terminales 1–2, apice masculæ; aliae 2–3 minores proximæ, omnino masculæ; reliquæ fœmineæ $1\frac{1}{2}$ –6 poll. longæ, 3 lin. latæ, densifloræ, a se 1–2 vel infima 3–9 poll. remotæ: superiores vel omnes apice masculæ interdum sessiles vel infima inserte vel longe exserte pedunculata. *Squamæ* ferrugineaæ: masculæ lanceolatae, obtusæ, muticæ, vel inferiores cuspidatae: fœmineæ superiores acutæ; inferiores longe hispido-cuspidatae. *Perigynium* $1\frac{7}{10}$ –2 lin. longum, lineam latum, fusco-olivaceum; ore ferrugineo membranaceo facile rupto. *Achenium* lineam longum, $\frac{6}{10}$ lin. latum, obovato-triquetrum, stipitatum, basi styli apiculatum.

Habitus *C. pendula*, Hudson.

The perigynium is occasionally abortive and of a lanceolate form. The rugose character arises from the drying of the perigynium, and disappears when soaked in water.

140. *C. excrava* (Boott); spieis 5–8 stricte erectis elongatis cylindricis multifloris plerumque basi attenuatis sessilibus, terminali mascula gracillima linearis pallide straminea, reliquis fœmineis suberassis densifloris olivaceis, superioribus vel omnibus eontiguis evaginatis, vel infima subinde remota vaginata plus minus longe exserte pedunculata sæpe longe foliaceo- vel breve bracteata; stigmatibus 3; perigyniis ovalibus triquetris longe subulato-rostratis divergentibus olivaceis, rostro pallido deflexo, ore membranaceo oblique fisso vel bidentato, nervatis pilosis, squama lanceolata acuminata longe hispido-euspidata pallida latioribus brevioribus vel longioribus. (TAB. CL.)

HAB. In regione temperata et subtropica Khasiæ, alt. 4–6000 pcd., *Hooker et Thomson*.

Radix e fibris lignosis validis fibrillisque setaccis ramosissimis constans; stolones longos, vaginis striatis, vel reliquiis setaccis vaginalium undique tectos, proferens. *Culmus* 1–3-ped., validus, triquierter, superne scaber, basi foliis vestientibus clausus; pars spicas gerens 3–12 poll. longa. *Folia* 2–4 lin. lata, glauco-viridia, culmo longiora, basi conduplicata reliquiis que vaginalium pannosis membranaceis ferrugineis marginata. *Bractea* infima vel angusta, evaginata, spica sua brevior vel longior; vel in speciminibus pluristachyis foliacea, 2–3 lin. lata, culmo multum longior, quandoque subbpedalis, plus minus longe vaginalata: sæpe sterilis, e spica infima 6–9 poll. remota: superiores vel brevissimæ vel obsoletæ. *Vagina* $\frac{1}{2}$ –2–3 poll. longa. *Ligula* ferruginea, ad margines alligata. *Pedunculus* 4 lin. ad 4 poll. longus. *Spicæ* omnes in speciminibus minoribus 1–1 $\frac{1}{2}$ poll. longæ, 1–2 lin. latæ, cylindricæ, contiguæ,

sessiles: in *majoribus* sæpe 6 poll. longæ, 3–4 lin. latæ, cylindricæ vel basi plerumque longe attenuato-laxifloræ: mascula semper unica gracillima: fœmineæ 4–7, flavidæ, demum olivaceæ: infima subinde 4 poll. remota. *Squamæ* omnes conformatæ, e basi ovata longe acuminato-cuspidatae: fœmineæ inferiores perigynio longiores, superiores breviores. *Perigynium* $1\frac{7}{10}$ –2 lin. longum, $\frac{6}{10}$ lin. latum. *Achenium* perigynio conforme, $\frac{8}{10}$ – $1\frac{2}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, ovali-triquetrum, pallidum, basi styli æquale decidua.

Affinis *C. amplifoliae*, B.

In one specimen there were a few female florets scattered about the middle of the male spike. It is only the lowest female spike, in those specimens having six or seven of them, that has a long, broad, vaginate bract. This is occasionally sterile, and more or less remote. It belongs to the *Trachychlænae* of Drejer, and in habit is like *C. amplifolia*.

141. *C. striata* (Michaux); spicis 4–5 rarius 3–6 distantibus erectis, maseulis 3 rarius 2–4 pallide ferrugineis, una alterave sæpe abortiva, infima plus minus longe setaceo-braeteata, reliquis 1–2 fœmineis olivaceis demum pallidis oblongis vel cylindricis basi attenuatis sessilibus evaginatis, vel infima remota sæpe inserte vel exserte pedunculata interdum laxiflora; braeteis longissimis angustis basi ampletentibus apie longe attenuato-setaceis; stigmatibus 3; perigyniis turgide ovatis rostratis bifurcatis (laciniis plerumque basi lobatis) undique vel apice solum pubescenti-seabris erebre nervosis olivaceis demum pallidis, squama ovata vel lancolata acuta sæpe subemarginata brcvi-cuspidata vel mutica purpurea vcl pallide ferruginea margine albida latioribus longioribusque.—*C. striata*, *Mich. ii.* 174; *Carey*, 530; *Sartwell, Eas.* n. 129. *C. polymorpha*, *Tor. Mon.* 413. (excl. syn.); *Dewey*, iii. (ser. 2) 355; *Carey*, ed. 1. 561. *C. bullata*, *Elliott*, ii. 556? *C. Houghtonii*, *Sartwell, Eas.* 130. (TAB. CLI)

HAB. In America Boreali. Carolina to Florida.—
β. New Jersey, *Greene*, *Knieskern*.

Stolonifera. *Culmus* sub-2-pedalis, acutangulus, firmus, sæpe gracilis, scaber, basi vaginis longis vel marginibus amplexentibus foliorum rubro-purpureis vel pallidis reticulatofissis clausus, foliisque vaginantibus inferne vestitus; pars spicas gerens 3–8 vel etiam 12 pollices longa. *Folia* semper basi vel sæpius omnino involuta culmo longiora, 1–2 lin. lata, sæpe angustiora, apice longe attenuata, insigniter nodosa, firma. *Bractea* $\frac{1}{2}$ –1 lin. lata, evaginata vel vaginâ 2–4 lin. longâ prædicta, semper culmo multum longior: infima sæpius vaginalata, longissima, 1- etiam interdum 2-pedalis: binæ basi involutæ, apice longe attenuato-setaceæ. *Vagina* infima 2–10 lin. vel rarius 1–2 $\frac{1}{2}$ poll. longa, interdum basi rubro-purpurea. *Ligula* elongata, ad margines alligata. *Pedunculus* 2–5 lin. vel 1–1 $\frac{1}{2}$ poll. rarius 4 $\frac{1}{2}$ poll. longus. *Spicæ masculæ* sæpius 3, rarius 2–4, alternae vel contiguæ, spicis fœmineis 3–6 poll. remotæ, terminalis plerumque 1–1 $\frac{1}{2}$ poll. longa, 1–2 lin. lata: aliae minores, infima sæpe longe setaceo-bracteata: una alterave inferiorum sæpe abortiva. *Spicæ fœmineæ* 1–2, non quam plures, $\frac{1}{2}$ –1 $\frac{1}{2}$ poll. longæ, 2–4 lin. latæ, densifloræ, basi attenuatæ, sessiles, vel inserte vel infima nunc laxiflora, plus minus exserte pedunculata: a se 2 $\frac{1}{2}$ 6–vel 8–12 poll. remotæ. *Squamæ* masculæ obtusæ, muticæ, pallide vel fusco-ferrugineaæ, margine albo-hyalinæ, nervo infra apicem evanescente; fœmineæ ovatae vel lanceolatae, acutæ vel obtusæ, sæpe subemarginatae, breve cuspidatae vel muticæ, purpureæ vel pallidæ, plus minus purpureo tinctæ. *Perigynium* 2 $\frac{1}{2}$ –3 lin. longum. $1\frac{5}{10}$ – $\frac{7}{10}$ lin. latum, olivaceum, demum pallidum, ovatum vel globo-

sum, inflatum, rostratum, bifurcatum, laciinis saepe basi lobatis, crebre nervosum, undique pubescenti-scabris, vel superne solum scabris; basi glabrum: coriaceum. *Achenium* $1\frac{3}{10}$ lin. longum, $\frac{9}{10}$ lin. latum, stipitatum, late obovatum, trigonum, castancum, basi styli aequali abrupte apiculatum.

A *C. Houghtonio* differt, culmo altiori; foliis bracteisque involutis, multum longioribus; ligula elongata; spicis foemineis 1-2, nunquam pluribus, basi attenuatis, distantibus; perigyniis magis molliter pubescenti-scabris; laciinis lobatis, olivaceis, demum pallidis; squamis foemineis saepe muticis, interdum emarginatis, masculis semper muticis nec ciliatis.

Var. β ; bracteis saepe culmum subaequantibus, foliisque planis; perigyniis interdum omnino glabris, saepe minus alte bicuspidatis; squamis plerumque muticis, magis coloratis.

This species is generally referred in the States to *C. polymorpha*, Muhlenberg, but as that plant is admitted to have included the *C. Halseyana* of Dewey, I have affixed the name of Muhlenberg to it. His variety n. 2 I have no doubt is referable to it. What n. 1 and 3 may prove to be, I know not, but neither apply to *C. striata*; I have not therefore quoted Muhlenberg for this species. I have the authority of Michaux' herbarium, which I examined in 1850, for referring the Florida plant to his *C. striata*. Dewey and Elliott quote *C. striata* under *C. lanuginosa*, Mich. (*C. pellita*, Muhl.), and Torrey, in his Mon., quotes it under *C. filiformis*. I suspect the *C. bullata* of Elliott is *C. striata*, that form which Chapman has sent from Florida, with the roughness limited to the upper part of the perigynium. *C. bullata*, Schk., has not been found south of Pennsylvania.

The New Jersey plant of Greene and Knickern, though it has developed leaves, always a smoother perigynium, and shorter bracts, is essentially the same as the southern plant. It will be found to vary in all these particulars. The species in fact varies much in the breadth, degree of involution of the leaves, in more or less diffused roughness of the perigynium, the greater or less bifurcation of its orifice, the length or entire absence of the mucro on the female scales, the breadth, and greater or less denseness of the female spikes. These are invariably one or two. Lesquerreux has found one or two specimens in Ohio with loose cylindric spikes and long linear cuspidate scales, which I suspect are referable to *C. striata*.

The affinity between *C. striata* and *C. Houghtonii* is very close, but I think they are distinct. In the Florida specimens of Chapman I find—

1 with 3 spikes.	3 with 2 male.	15 with 1 female.
12 „ 4	21 „ 3	13 „ 2
14 „ 5	4 „ 4	
1 „ 6		
—	—	
28	28	28

In eighteen, one or more of the lower male spikes are abortive. In eight, the lower female is from two to twelve inches remote, evaginate or vaginata, the vagina $1\frac{1}{2}$ inches long.

In the New Jersey plant I find—

2 with 2 spikes.	1 with 1 male.	9 with 1 female.
16 „ 4	9 „ 2	15 „ 2
6 „ 5	14 „ 3	

In seven, one or more of the lower male spikes are abortive.

In two, the upper female is male at top.

In seven, the lower female is from one to eight inches remote, evaginate or vaginata, the vagina $\frac{1}{2}$ - $1\frac{1}{2}$ inches long.

In Tab. CLI. a perigynium of *C. Houghtonii* is figured, to show the difference in the orifice and hairiness between it and those of *C. striata*.

142. *C. trichocarpa* (Muhlenberg); spicis 6-7 rarius 5-8 vel etiam 12 cylindricis erectis, masculis 3-5 etiam rarius 9 gracilibus alternis sessilibus, vel superioribus congestis, infimis 1-2 remotis bracteatis plus minus

longe pedunculatis, ferrugineis, reliquis 2-3 rarius 4 foemineis subcrassis alternis pallidis, superioribus sessilibus evaginatis, infima remota basi attenuato-laxiflora exserte pedunculata; bracteis culmo longioribus vaginisque glabris; stigmatibus 3; perigyniis ovatis vel ovato-lanceolatis sensim plus minus longe rostratis alte bicuspidatis, laciinis lanceolatis margine membranaceis scabris, crebre nervosis pubescentibus, squama acuta mutica vel plus minus longe aristata ferruginea medio pallida nervata carina saepe scabra longioribus vel rarius (aristâ) brevioribus.—*C. trichocarpa*, Muhl. 257; Carey, 530; Willd. iv. 302; Schk. f. 148. n. n. n.; Kunth, 484; Dewey, Sill. vii. 274, xi. 158; Schw. et Tor. 362; Sartwell, Eas. n. 133. *C. striata*, Carey, ed. 1. 561. (TAB. CLII.)

HAB. In America septentrionali. New England to Michigan, Carey. Canada to Georgia, Torrey.

Culmus 2-3-ped., triquetus, validus, rigidus, laevis, apice gracilis, scaberrimus, basi rudimentis foliorum purpureis vaginisque reticulato-fissis foliisque vaginantibus vestitus; pars spicas gerens 8-14 poll. longa. *Folia* 1-3 lin. lata, culmo longiora, vcl breviora, superne marginibus carinaque scaberima. *Bracteæ* foliis similis, culmo longiores, omnes vel infima solum plus minus vaginatae, basi supra scabre, saepe transversim corrugatae. *Vaginæ* glabre, 2-8 rarius 16 lin. longæ. *Ligula* purpurea, integra, concava, amplectens. *Pedunculus* infimus $\frac{1}{2}$ -2 poll. longus, superne scaber. *Spicæ masculæ* saepius 4 vel 5, rarius 3 vel interdum 2, vcl 9, graciles, ferrugineæ, demum castaneæ, 4-18 lin. longæ, 1- $1\frac{1}{4}$ lin. latae; infima (vcl inferiores 2) saepc remota, pedunculata, bracteata: rarius apice foemineæ. *Spicæ foemineæ* saepius 2 vel 3, rarius 4, 16 lin. ad $2\frac{1}{2}$ poll. longæ, 4-6 lin. latae, a sc $1\frac{1}{2}$ -3, vel infima 7 poll. remota, omnes subdensifloræ, vel basi attenuatae, laxifloræ; sessiles, vcl inferiores plus minus longe exserte pedunculatae, una vel altera rarius basi composita: suprema rarius apice mascula. *Squamæ masculæ* inferiores obtusæ, muticeæ, nervo infra apicem albo-hyalinum, ciliatum, evanescente; superiores acutæ, cuspidatæ: foemineæ inferiores interdum ovatae, acutæ, muticeæ; superiores vel omnes plus minus aristatae. *Perigynium* 3- $3\frac{9}{10}$ lin. longum, 1- $1\frac{3}{10}$ lin. latum, ovatum, vel ovato-lanceolatum, plus minus longe rostratum (rostro 1-2 lin. longo), pubescens, alte bicuspidatum, laciinae scabre, basi ad margines membranaceæ. *Achenium* 1 lin. longum, $\frac{8}{10}$ lin. latum, obovatum, triquetrum, pallidum, basi styli apiculatum.

Var. β ; perigyniis glabris, rostro ad margines laciinisque scabris; vaginæ scabris.

HAB. Red River, Douglas, n. 257. Pen-Yan, Sartwell.

In 29 specimens I find—

4 with 5 spikes.	1 with 2 male.	18 with 2 female.
11 „ 6	5 „ 3	9 „ 3
9 „ 7	14 „ 4	2 „ 4
4 „ 8	8 „ 5	
1 „ 12	1 „ 9	

In only one specimen the two lower of three males were female at top.

A *C. aristata*, Br., differt, foliis vaginisque glabris; bracteis basi supra scabris; perigyniis pubescentibus; laciinis margine basi membranaceis, scabris; squamis masculis inferioribus muticis, ciliatis; foemineis saepe muticis.

I have referred the var. β to *C. trichocarpa* from its male scales and the laciinae of the perigynium agreeing with it, rather than with *C. aristata*. The roughness of the vaginæ shows no tendency to hairiness.

143. *C. alta* (Boott); spica pallida elongata lanceolata e spiculis pluribus (16–20) androgynis basi masculis oblongis simplicibus sessilibus, superioribus contiguis, inferioribus plus minus remotis longissime bracteatis; stigmatibus 2; perigyniis ellipticis rostellatis bidentatis plano-convexis marginatis serratis utrinque medio nervatis spongiosis pallidis, squamam ovatam acuminatam vel mucronulatam pallidam subæquantibus.—*C. alta*, *Boott*, *Lin. Trans.* xx. 130. *C. Brizopyrum?* *Kunze*, 169, t. 43. (TAB. CLIII.)

HAB. In Java, *Dr. Horsfield*.

Culmus 3–4-ped., lœvis vel apice inter spiculas scabriusculus, superne nudus, inferne foliatus, basi reliquiis foliorum fibritis tectus. *Folia* 1–1½ lin. lata, plana, culmum subæquantia. *Bractæ* inferiores foliaceæ, elongatæ: infima spieam longe superans: superiores basi dilatatae, setaceæ, spiculis breviores. *Spica* 4–5 poll. longa, 4 lin. lata. *Spiculae* 5–7 lin. longæ, 2 lin. latæ: superiores (*infra terminalem*) abbreviatæ, congestæ, inferiores deorsum plus minus remotæ: infima quandoque 1–½ poll. distans. *Perigynium* 1½ lin. longum, ½ lin. latum, ad latera superne crasse spongiosum, marginatum, serratum. *Achenium* ½ lin. longum, ³/₁₀ lin. latum, stipitatum.

This species is allied to *C. remota*, L. Judging from the figure of *C. brizopyrum* of Kunze, I should doubt any specific difference existing between it and *C. alta*, especially as the composition of the lower spiculae is not constant in *C. brizopyrum*. In Dr. Horsfield's specimens the spiculae are simple, as they are in four of the five spikes figured by Kunze. The acheneum is not more than a third of the length of the perigynium, which laterally is of a thick spongy substance, as in *C. remota*, from which it differs in its more numerous crowded elongated spiculae and longer bracts.

144. *C. gracilis* (Brown); spica oblonga vel elongata ferruginea composita, e spiculis 5–12 pluribusve oblongo-cylindricis laxifloris androgynis apice masculis omnibus (vel superioribus solum) simplicibus, inferioribus inæqualiter exserte pedunculatis remotis bracteatis geminatis ternatisve sœpe compositis, infima subinde solitaria; stigmatibus 2; perigyniis late ovalibus compressis rostratis bifidis conico-stipitatis striato-nervatis scabris fusco-ferrugineis membranaceis, squama ovata acuta mucronata vel aristata vel obtusa mutica ferruginea latioribus longioribusque.—*C. gracilis*, *Brown*, *Prod.* 242 (1810). *C. lachnosperma*, *Wallich*, *Cat.* 3379 (*ex parte*); *Nees*, *apud Wight*, *Contr.* 124; *Kunth*, *Cyp.* 505 (*excl. descript. auctoris, quæ C. hebecarpam, Mey., pingit*). *C. flexilis*, *Don*, *Fl. Nep.* 42 (*non Rudge*). *C. lenta*, *Don*, *Lin. Trans.* xiv. 327; *Spreng. Sys.* iii. 811; *Kunth*, *Cyp.* 418. *C. Commersoniana*, *Kunth*, *Cyp.* 391. (TAB. CLIV., CLV., and Var. β , TAB. CLVI. TAB. CLIV. Fig. 1, spec. e Nova Hollandia, *Herb. Brown*; Fig. 2, e Nepalia, *Herb. Wallich*. TAB. CLV., spec. ab Ins. Mauritius, *Herb. Commerson*.)

HAB. In Australia, Port Jackson, *Brown*. Ins. Mauritius et Bourbon, *Commerson*, etc. In montibus subtropicis Himalayæ, Punjab, *Fleming*; Nipal, *Wallich*; Kumaon, *Royle*, n. 103. Peninsula Ind. Or., Pulny Mountains, *Wight*. In Zeylania, *Thwaites*.

Culmus sub-3-ped., gracilis, rigidus, acutangulus, lœvis, inter spicas scaber, basi foliatus; pars spicas gerens 7–12 poll. longa. *Folia* 1–½ lin. lata, culmo breviora, firma, plana, basi involuta. *Bractæ* inferiores foliaceæ, culmo breviores: supre-

mæ setaceæ. *Vaginæ* 3–12 lin. longæ, striatæ, scabré, intus vel summæ omnino ferruginæ. *Pedunculi* inæquales, 6 lin. ad 3½ poll. longi, capillares: superioris *insertæ* infcriores longæ *exsertæ* vaginati, scabri: infimus inferne vaginulæ muticis, sœpe sterilibus, vel monostachyis intructus. *Spiculae* inæquales, 6–10 lin. longæ, basi 2 lin. latæ; apice scitaceæ, imbricato-maseulæ sub 3 lin. longo; laxifloræ: a se 8 lin. ad 5 poll. remotæ: omnes vel superiores solum simplices: inferiores geminatae vel ternatae, sœpe compositæ: vel infima solitaria. *Squamæ* fœmineæ latiores, patulæ, acutæ, vel præcipue inferiores micronatae vel aristatae, rarius obtusæ, muticæ. *Perigynium* 1–²/₅ lin. longum, ⅔ lin. latum, utrinque nervatum, antice plurinervium, scabrum. *Achenium* ⅓ lin. longum, ⅔ lin. latum, ovale, lenticulare, flavidum.

β . *minor*; spiculis ovatis densifloris, rostro breviori. (Tab. CLVI.)

HAB. Ins. Bourbon. *Boivin*, n. 935 (Herb. Mus. Paris).

I see no specific characters by which I can distinguish the New Holland from the East Indian, Ceylon, Mauritius, and Bourbon specimens. The perigynium of the former is rather smaller (1–⅔ lin. long.), and the scales are obtuse and muticæ, but I observe the same occasionally in the Indian and Mauritius plant. In one of Dr. Wallich's specimens, in a young state, the lower peduncle has a spicula arising from each of its two vaginulæ, and is thus racemose; while in another, equally young, the peduncle is geminate, and the vaginulæ on one are sterile. I observe one of these fertile vaginulæ on the peduncle of one of the two specimens I have seen from New Holland. They are absent in Dr. Wight's specimen. I have no doubt that a more accurate knowledge of the species will show that the inflorescence, in more luxuriant specimens, approaches in some degree that of *C. longieruris*, Nees, in which the longer peduncles of the fascicles have simple or geminate spiculae issuing from alternate vaginulae. It is more compound in Tab. CLV. than in the New Holland and Nipal specimens. In one specimen of Dr. Royle's all the spiculae are simple. We observe the same variation in *C. Cherokeeensis*, Schw., which was originally described and figured with *simple* spikes; and before I was aware of the tendency of certain species to vary in this respect, I described a specimen of the same plant, with geminate and ternate spiculae, under the name of *C. Christyanæ*, in the Boston Journ. of Nat. Hist.

I am indebted to M. Spach for authentic specimens of the *C. Commersoniana*, Kunth, one of which is figured in Tab. CLV., and also for the var. β *minor*, from the Island of Bourbon, *Boivin*, n. 935, figured in Tab. CLVI. The short ovate and more compact spiculae, with the often abbreviate rostrum, led me to think at first it was distinct, but I can see no essential characters to distinguish it. The rostrum varies in length. The emargination of the lower female squama is accidental, and by no means constant.

I have not seen specimens of *C. brunea*, Thunberg, from Japan, but I suspect that it may be found inseparable from the *C. gracilis*, Br., as I believe *C. pumila*, Th., is from *C. littorea*, Labill. (*C. Urvillei*, Brongn. ! fide spec. ! ex Herb. Mus. Paris).

145. *C. longieruris* (Nees); spica prælonga castanea duplicato-fasciculata; fasciculis sub-12 vaginatis, superioribus insertæ pedunculatis approximatis, inferioribus exsertis remotis bracteatis elongatis magis compositis e pedunculis 3–4 setaceis inæqualibus nutantibus, *brevioribus* spiculas simplices alternas, *longioribus* simplices geminatas ternatasque gerentibus; spiculis permultis inæqualibus oblongis cylindricisque androgyniis apice masculis laxifloris; stigmatibus 2, longissimis; perigyniis ellipticis longe rostratis subbifidis plano-convexis glabris marginibus incurvis serratis leviter nervatis stipitatis castaneis membranaceis, squama lanceolata acuta striata cas-

tanea nervo viridi longioribus vel subæquantibus.—C. longicruris, Nees, *Wight, Contr.* 124. (TAB. CLVII.)

HAB. In Himalaya occidentali subtropica, alt. 5–7000 ped. Kumaon, Royle, n. 87 (*ex parte*) et 93. Simla, Thomson. In Mont. Pen. Ind. Or., Nilghiri, Wight.

Culmus 4-ped., rigidus, obtusangulus, lœvis; pars spicas gerens 2½ ped. longa. *Folia* 2½ lin. lata, culmo breviora, plana. *Bractæ* inferiores foliaceæ, culmo breviores: supremæ setaceæ. *Pedunculi* capillares, scabri. *Fasciculi* superiores inserte pedunculati, a se ½–3 poll. remoti: inferiores plus minus exserti, 4–10 poll. remoti: in quoque fasciculo pedunculus adest longior, spiculas vaginulatas simplices vel inferiores geminatas ternatasque gerens. *Spiculae* inæquales, 6–15 lin. longæ, apice imbricato-masculæ (2–6 lin. longo), basi laxifloræ, 2 lin. latae, flosculis alternatim dispositis. *Squamæ* lanceolatae, acutæ, plerumque omnes muticæ. *Perigynium* 1 9/10 lin. longum, 4/10 lin. latum, leviter nervatum, nervis antice sæpius inconspicuis, marginibus incurvis. *Achenium* 9/10 lin. longum, plus 5/10 lin. latum, ellipticum, lenticulare, pallidum.

This fine species, originally found by Dr. Royle, near Mussoorie, is closely allied to *C. teinogyna*, but the smooth perigynium, with its inverted margins, less deeply cleft mouth, and often indistinct anterior nerves, the absence of the arista on the scales, the diffuse elongated inflorescence, and the broader leaves distinguish it.

147. *C. teinogyna* (Boott); spica oblonga vel elongata castanea composita, e spiculis 5–20 pluribusve inæqualibus oblongis cylindricisque laxifloris androgynis apice masculis vaginatis, superioribus simplicibus *inserte*, inferioribus *exserte* pedunculatis remotis bracteatis geminatis ternatisve vel racemosis; stigmatibus 2, longissimis; perigyniis oblongo-ellipticis longe rostratis acutæ bifidis plano-convcxis utrinque leviter nervatis scabris margine serratis stipitatis membranaceis, squama lanceolata acuta: cuspidata vel longe aristata striata dorso scabra castanea nervo viridi angustioribus brevioribus vel subæquantibus. (TAB. CLVIII.)

HAB. In Bengalia orientali temperata et subtropica, ad Khasia, alt. 4–6000 ped., Hooker et Thompson.

Culmus 1½–2-ped., gracilis, acutangulus, lœvis; pars spicas gerens 3–12 poll. longa. *Folia* lin. lata, sæpius involuta, apice setaceo-attenuata, firma, culmo breviora vel eum æquantia. *Bractæ* vaginatae, angustæ: inferiores foliaceæ, culmo breviores: superiores setaceæ. *Vaginæ* dorso striatae, scabre: inferiores 6–15 lin. longæ, intus vel superiores (3 lin. longæ) omnino ferrugineæ, apice hiantes, aristatae. *Pedunculi* sebri: inferiores pollicem longi, subexserti, inæquales: infimus interdum 2½–5 poll. longus, longe exsertus. *Spiculae* inæquales, 5–16 lin. longæ, basi 2 lin. latae, laxifloræ, apice imbricato-masculæ, 2–4 lin. longo: superiores simplices, approximatæ, insertæ: inferiores geminatae vel ternatae, subexsertæ vel infimæ racemosæ, vaginulatae, longe exsertæ. *Squamæ* foemineæ lanceolatae, acuminatae, acutæ, striatae, scabre: inferiores cuspidatae, superiores longe aristatae: masculæ angustiores, aristatae. *Perigynium* 2½ lin. longum, 5/10–6/10 lin. latum. *Achenium* 1 9/10 lin. longum, plus 5/10 lin. latum, oblongo-ellipticum, lenticulare, basi styli incrassata. *Stigmata* 4 lin. longa.

This species, for which we are indebted to Dr. Hooker and Dr. Thomson, is intermediate between *C. gracilis*, Br., and *C. longicruris*, Nees, having the inflorescence and rough perigynia of the first and the elliptic perigynium and long stigmata of the last. This remarkable character of the stigmata allies it more decidedly to *C. longicruris*, from which it differs in its simpler inflorescence, rough and more strongly-nerved perigynium, long aristate scales, and narrower involute leaves.

The perigynium figured does not exhibit the depth or acuteness of the bifid orifice, and the female scales are generally more acuminate and acute than those drawn.

148. *C. intumescens* (Rudge); spicis 2–4 approximatis, terminali mascula linearis erecta pedunculata pallide ferruginea, reliquis foemineis amplis rotundatis 2–10-floris evaginatis contignis sessilibus vel infima pedunculata, olivaccis rarius apice masculis; bracteis erectis culmum longe superantibus; stigmatibus 3; perigyniis maximis ventricosis oblongo-ovatis in rostrum cylindricum sensim attenuatis bifidis glabris vel superne marginibus laciniisve scabris nervosis olivaceis divergentibus, squama ovato-lanceolata acuta plus minus hispido-cuspidata pallida medio nervata latioribus longioribusque.—*C. intumescens*, Rudge, *Lin. Trans.* vii. 97. t. 9. f. 3; Gray, *Ann. Lyc.* iii. 236; Darlington, *Fl. Cest.* 353; Carey, 531; Sartwell, *Eas.* n. 139. *C. folliculata*, Wahl. *Act. Holm.* 152 (non Lin.); Michaux, ii. 171; Willd. iv. 281; Schk. N. f. 52; Muhl. 243 (*excl. β*); Schlechtendal, *Linnæa*, x. 263; Kunth, 498; Dewey, *Sill.* x. 32; Bigelow, 361; Tuckerman, 13. (TAB. CLIX. et CLX.)

HAB. In America septentrionali. Arctic America to New Orleans.

Culmus 1–2-ped., gracilis, triquetus, scaber, basi rudimentis foliorum purpureis sursumque foliis vaginantibus tectus; pars spicas gerens 1–3½ poll. longa. *Folia* 2–3 lin. lata, culmo longiora, graminea, nodosa, fusco-viridia, demum flava. *Bractæ* foliaceæ, 3–6 poll. longæ, erectæ, evaginatae: 1–2 steriles vaginatae, paulo infra spicas sitæ. *Auriculae* rotundatae, pallidae. *Pedunculus* 4–5 lin. longus, scaber. *Spica* mascula ½–2 poll. longa, 1–1½ lin. lata, rarius sessilis, basi attenuata, nuda vel bracteata: bractea sæpe paulo infra basin sita. *Squamæ* vel lanceolatae, longe acuminatae, acutæ: vel omnes obtusæ, muticæ, vel supremæ mucronatae, pallide ferrugineæ, medio virides, margine albo-hyalinae. *Spicae* foemineæ 1–2, rarius 3, ovatae, demum rotundatae, 8–12 lin. longæ latæque, arcte contiguæ, sessiles, vel infima, rarius inferiores, brcvi-pedunculatae, a sc 6–10 lin. remotæ, 2–6 vel rarius sub-10-floræ, rarius apice masculæ. *Squamæ* latiores, acutæ vel plus minus longe hispido-cuspidatae. *Perigynium* 6–6½ lin. longum, 2½ lin. latum. *Achenium* 2½ lin. longum, 1 5/10 lin. latum, ovale, triquetrum, pallidum, basi styli contorti crassiori apiculatum.

This species is common in North America, extending from Norway House to New Orleans. It has not been described by Elliott, his *C. folliculata* being, as I am informed by Mr. Curtis, the true plant of Linnæus. The specimen of Michaux, in the herbarium of the Garden of Plants, is certainly *C. intumescens*, though Kunth (pp. 496 and 499) appears to have had *C. tentaculata* (*C. rostrata*, Muhl.) under the name of *C. folliculata*, Michaux.

148. *C. Grayi* (Carey); spicis 2–3 approximatis, terminali mascula lincari erecta pedunculata castanea, reliquis foemineis amplissimis globosis densifloris undique squarrosis 25–30-floris pedunculatis evaginatis contiguis fusco-olivaceis; bracteis culmum longe superantibus; stigmatibus 3; perigyniis maximis ventricosis lanceolato-ovatis sensim in rostrum breve acuminatis bifidis glabris laciniis solum scabris nervosis fusco-olivaceis undique divergentibus, squama ovata acuta vel cuspidata castanea medio nervata margine albo-hyalina latioribus terties longioribus.—*C. Grayi*, Carey, Gray, *Man. edit.* 1. 563, *edit.* 2. 531; Dewey, 4–22 (1847); Sartwell, *Eas.* n.

140. *C. intumescens*, var. *globularis*, *Gray*, *Ann. Lyc.* iii. 236; *Tor. Cyp.* 420. (TAB. CLXI.)

HAB. In America sept. New York and Ohio.

Culmus 3-ped., validus, triqueter, lœvis, apice seabriuseulus, basi foliatus, foliis vaginatibus sursum tectus; pars spicas gerens 2–4 poll. longa. *Folia* 3–4½ lin. lata, culmum longe superantia, fusco-viridia, graminea. *Bractæ foliaceæ*, 3–10 poll. longæ, evaginatae, 1–2 steriles vaginatæ paulo infra spicas sitæ. *Auriculae* rotundatae, pallidæ. *Pedunculus* 8–12 lin. longus, scaber. *Spica mascula* 1–1½ poll. longa, 1–1½ lin. lata, pedunculata, sœpe obliqua, nec spicam fœmineam longe superans, nuda vel bracteata: bractæ sœpe subfoliacea, spicâ longior. *Spicæ fœmineæ* globulares, 1½ poll. longæ lataeque, multifloræ. *Squamæ* castaneæ, marginæ albo-hyalinæ, masculæ muticæ; fœmineæ latiores, muticæ vel cuspidatae. *Perigynium* sœpe 8 lin. longum, 3 lin. latum, plurinervium. *Achenium* 2 lin. longum, 1–2 lin. latum, ovari-triquetrum, pallidum, basi styli crassiori apiculatum.

This species was found by Dr. Gray in meadows at Utica, and described in 1834, in the *Ann. Lyc.* N. York, as a variety of *C. intumescens*, from which species Mr. Carey separated it in 1848, in Dr. Gray's 'Manual.' The large globular female spikes, the smooth perigynium with its gradual acumination into a short rostrum, its more copious nerves, stouter and smoother culm, and broader leaves, sufficiently distinguish it. It has been found by Mr. Sullivant in Ohio.

149. *C. lupulina* (Muhlenberg); spicis 3–6 erectis contiguis, terminali 1 rarius 2 mascula cylindrica bracteata, reliquis fœmineis crassis densifloris ovatis vel cylindraceis, superioribus sessilibus, inferioribus exserte pedunculatis, infima quandoque plus minus remota, olivaceis demum fulvis; bractæ latis longissimis; stigmatibus 3; perigyniis e basi ovata ventricosa in rostrum cylindricum attenuatis, ore obliquo bifurcato, glabris vel superne ad margines plus minus serrato-scabris nervosis stipitatis oblique adscendentibus, squama lanceolata acuminata acuta vel longe hispido-aristata medio viridi nervosa marginibus membranaceis fulvis latioribus longioribusque.—*C. lupulina*, *Muhl.* 141; *Willd.* 266; *Schk.* 54. f. 123 et 194; *Elliot*, 544; *Dewey*, xi. 165; *Schw.* et *Tor.* 337; *Darlington*, 353; *Beck*, 438; *Tor. Cyp.* 420; *Kunth*, 497; *Bigelow*, 361; *Carey*, 532; *Sartwell*, *Exs. n.* 146. *C. lurida*, *Wahl. Act.* 153. (TAB. CLXII.)

HAB. In America sept. Hudson's Bay to Georgia.

Culmus 2–3-ped., validus, lœvis, foliatus; pars spicas gerens 4–8 etiam 14 poll. longa. *Folia* 3–5 lin. lata, firma, nodosa, culmo longiora. *Bractæ* culmum longe superantes: inferiores plus minus vaginatæ, latae. *Vagina* infima ½–3 poll. longa. *Pedunculus* infimus ½–7 poll. longus, lœvis. *Spica mascula* 1–2½ poll. longa, 1–2½ lin. lata, rarius altera minor prope infra sita. *Squamæ* lanceolatae, plus minus latae, medio virides, plurinerviae, margine membranacea, demum fulvae, rarius muticæ, cuspidatae vel inferiores elongatae, longe subulato-acuminatae, plus minus hispido-aristatae. *Spicæ fœmineæ* 1–2 poll. longæ, 1 poll. latae, arcte contiguae, vel alternæ: suprema sessilis, evaginata, reliqua pedunculatae, vaginatae: infima quandoque 9–10 poll. remota, longissime exserte pedunculata. *Perigynium* 6½–7½ lin. longum, 2–3 lin. latum, ore obliquo bifurcato, stipitatum. *Achenium* 2 lin. longum, 1–2 lin. latum, ovale, acute triquetrum, angulis ad medium subnodosis, faciebus concaviusculis, pallidum, punctulatum, basi styli contorti crassiori apiculatum.

150. *C. lupuliformis* (Sartwell); spicis 5–8 erectis contiguis, terminalibus 1–2 masculis cylindricis, suprema sœpe elongata, bracteatis, reliquis fœmineis crassis densifloris, superioribus sessilibus sœpe abbreviatis, inferioribus subremotis cylindricis exserte pedunculatis, infima quandoque remota, olivaceis demum fulvis; bractæ latis longissimis; stigmatibus 3; perigyniis e basi ovata ventricosa in rostrum longum cylindricum attenuatis bifidis glabris vel superne ad margines serrato-scabris nervosis sessilibus oblique adscendentibus, squama lanceolata acuminata acuta hispido-aristata medio viridi nervata margine membranacea fulva latioribus longioribusque.—*C. lupuliformis*, *Sartwell*, *Exs. n.* 147; *Dewey*, ix. (ser. 2) 290. *C. lupulina*, β? *polystachya*, *Schw.* et *Tor.* 337; *Carey*, 532. (TAB. CLXIII.)

HAB. In America septentrionali. New York, *Sartwell*.

Culmus, *folia*, *squamæ* ut in *C. lupulina*. *Spicæ masculæ* 1–2: terminalis sœpe 4 poll. longa, 3 lin. lata. *Spicæ fœmineæ* 3 poll. longæ. *Perigynium* 7½–8 lin. longum, 3 lin. latum, sessile, bifidum. *Achenium* 1–2 lin. longum, 1½ lin. latum, acute triquetrum, angulis ad medium insigniter nodosis, faciebus concavis, pallidum.

The larger and more numerous spikes, their always alternate arrangement, the sessile perigynium and broader achenium, with its more distinctly mammillated angles, are the chief characters which distinguish this species from *C. lupulina*. In ten specimens I find five with two male spikes, while in twenty-seven specimens of *C. lupulina* I find only one with as many. The perigynia in both vary in the roughness of the margins of the rostrum. The orifice is, I think, generally oblique in *C. lupulina*, and the laciniæ longer, though exceptions may be found to either of these characters. In both, the lower female spike is sometimes remote, on a long exserted peduncle. In one specimen of *C. lupuliformis* the upper female spike is male at base, and the penultimate lower one compound at base. I have never seen it beyond the limits of New Jersey and New York, while the range of *C. lupulina* is from Hudson's Bay to Georgia.

151. *C. gigantea* (Rudge); spicis 4–6 rarius 2–8 cylindricis, terminalibus 2–4 rarius 1–5 masculis contiguis, inferioribus bracteatis, reliquis fœmineis vel apice masculis remotis erectis vel inferioribus longe exserte pedunculatis sœpe nutantibus vel pendulis, olivaceis demum fulvis; bractæ latis culmum longissime superantibus; stigmatibus 3; perigyniis e basi ovata vel suborbiculata ventricosa in rostrum longissimum tenue cylindricum attenuatis, ore sœpe obliquo bifido, horizontaliter divergentibus glabris nervosis, squama ovato-lancolata acuminata acuta (rarius mutica) cuspidata medio viridi nervata margine membranacea latioribus longioribusque.—*C. gigantea*, *Rudge*, *Lin. Trans.* vii. 99. t. 10. f. 2; *Elliott*, ii. 544; *Muhl.* 240; *Dewey*, xi. 164; *Kunth*, 503. (TAB. CLXIV.)

HAB. In America septentrionali. Kentucky to Florida.

Radix stolonifera. *Culmus* 1½–3-ped., firmus, triqueter, lœvis, foliatus; pars spicas gerens 6–18 poll. longa. *Folia* 3–5 lin. lata, culmo longiora, nodosa. *Bractæ* inferiores vaginatae: infima 3–4 lin. lata, bipedalis. *Vagina* infima 4 lin. ad 2½ poll. longa. *Pedunculus* infimus 1–8 poll. longus. *Spicæ masculæ* 1–2½ poll. longæ, 1–1½ lin. latae: inferiores sœpe longe bracteatae, una vel altera e perigynio, apice fisso, oriens: infima quandoque basi flosculis fœmineis paucis instructa. *Spicæ fœmineæ* 1–3 poll. longæ, 1 poll. latae, sœpe

omnes vel superiores apice masculæ vel steriles: suprema sessilis, evaginata, reliquæ plus minus longe exserte pedunculatae: infima subinde 10 poll. remota, pendula: olivaceæ, demum fulvæ. *Squamæ* conformes, lanceolatæ, muticæ vel sæpius cuspidatæ. *Perigynium* $5\frac{1}{2}$ - $7\frac{1}{2}$ lin. longum, sub-2 lin. latum, horizontaliter divergens, rarius (*sub lente*) rostro ad apicem scabriusculo. *Achenium* $1-1\frac{3}{10}$ lin. longum, $1\frac{4}{10}$ lin. latum, angulis acutissimis prominentibus, faciebus concavissimis, basi styli contorti crassiori abrupte apiculatum.

I am indebted to Mr. Carey for a large suite of beautiful specimens of this species, sent to him by Dr. Short from Louisville in Kentucky. I find in 104 specimens—

1 with 3 spikes.	1 with 1 male.	70 with 2 female.
24 „ 4	34 „ 2	33 „ 3
39 „ 5	46 „ 3	1 „ 4
32 „ 6	21 „ 4	
6 „ 7	2 „ 5	
2 „ 8		

The more numerous male spikes, the remote, fewer female ones, the horizontally diverging perigynia, and the acute even angles of the achene, distinguish this species from the preceding ones.

152. *C. hystricina* (Muhlenberg); spicis 3-4 rarius 5 stramineis densifloris approximatis, terminali mascula (rarius androgyna apicc vel basi mascula) gracili cylindrica subsessili, reliquis fœmineis oblongis vel cylindricis crassis squarrosis, suprema sessili, superioribus vel omnibus evaginatis cernuis vcl infima remota exserte pedunculata nutanti subinde basi composita; bracteis culmo longioribus; stigmatibus 3; perigyniis elliptico-ovatis in rostrum longiusculum attenuatis bifidis inflatis glabris nervosis, squama ovata acuta vel emarginata longe hispido-cuspidata ciliata latioribus longioribusque.—*C. hystricina*, Muhl. 252; Willd. 282; Schk. f. 127; Kunth, 497; Dewey, x. 35; Schw. et Tor. 355; Elliott, 550; Darlington, 352; Beck, 441; Carey, 531; Sartwell, Exs. 136. *C. Cooleyi*, Dewey, xlvi. 144. (TAB. CLXV.)

HAB. In America septentrionali, Canada to Georgia.

Culmus $1-1\frac{1}{2}$ -ped., rigidus, acutangulus, scaberrimus, basi foliatus, rudimentis foliorum purpureis vaginisque reticulato-fassis tectus; pars spicas gerens 2-8 poll. longa. *Folia* $1\frac{1}{2}$ - $2\frac{1}{2}$ lin. lata, culmo breviora, firma. *Bracteæ* foliaceæ: inferiores culmo longiores: infima rarius plus minus vaginata. *Vagina* 3-12 lin. longa. *Pedunculi* graciles, $\frac{1}{2}$ - $3\frac{1}{2}$ poll. longi, scabri. *Spica mascula* 8-16 lin. longa, $1-1\frac{1}{4}$ lin. lata, rarius androgyna, apice vel basi mascula. *Spicae fœminæ* 6-18 lin. longæ, 6-7 lin. latæ, approximatae vcl contiguae: superiores vel omnes evaginatae: suprema sessilis: reliquæ pedunculatae, cernuae, vcl infima remota, vaginata, plus minus longe exserte pedunculata, subinde basi composita. *Squamæ* omnes apice ciliatae: inferiores longius cuspidatae: superiores aeutæ. *Perigynium* $2\frac{8}{10}$ - 3 lin. longum, $\frac{7}{10}$ latum, utrinque plurinervium; ore posse secto. *Achenium* $\frac{8}{10}$ lin. longum, $\frac{6}{10}$ lin. latum, obovatum, acute triquetrum, faciebus concaviusculis, basi styli erassiori apiculatum, castaneum.

Affinis *C. tentaculæ*, Muhl., quæ planta robustior perigyniisque majoribus magis turgidis, nervis magis distantibus, rostro sœpe scabro, achenio elliptico, stylo contorto, spicis brevius pedunculatis nec nutantibus, bracteis longioribus, gaudet.

153. *C. echinochloe* (Kunze); spica decomposita pallida, e spicis partialibus ambitu lanceolatis 6-10 pluribus, superioribus simplicibus sessilibus confertis, inferioribus basi ramosis laxis exserte pedunculatis remotis longe foliaceo-bracteatis; spiculis oblongis apice parce

masculis basi flosculis fœmineis pluribus laxe dispositis, in quaue spica 5-6 simplicibus, vel inferioribus remotiusculis 2-4 compositis; bracteis inferioribus culmo longioribus; stigmatibus 3; perigyniis ovalibus trigonis rostratis bifidis (laciis truncatis) glabris superne margine ciliato-serratis nervatis pallidis rectis vel excurvis, squama ovata acuta vel obtusa sœpe emarginata hispido-aristata striato-nervosa apice scabriuscula pallide castanea æquilata longioribus.—*C. echinochloe*, Kunze, 47. t. 12; Richard, *Fl. Abyssin.* ii. 513. (TAB. CLXVI.)

HAB. In Abyssinia. “Locis apricis lapidosis, inter gramina partis superioris Montis Scholoda,” Schimper, n. 26, *Un. Itin.*; “Alsega, ad montes, 6000 ped.,” Schimper, n. 538.

Culmus $1\frac{1}{2}$ -2-ped., triquetter, validus, lœvis, foliatus; pars spicas gerens 7-10 poll. longa. *Folia* 3- $4\frac{1}{2}$ lin. lata, culmo longiora, flavescentia. *Bracteæ* inferiores 2-3 lin. latæ, culmo longiores: supremæ setaceæ, spicis suis breviores. *Vaginæ* superiores scabrae: infima 1-2 poll. longa. *Pedunculus* infimus $2\frac{1}{2}$ - $3\frac{1}{2}$ poll. longus, scaberrimus. *Spicæ* partiales inferiores $1\frac{1}{2}$ poll. longæ, 4-5 lin. latæ. *Spiculae* 5 lin. longæ, 2 lin. latæ. *Squamæ* conformes, apice ciliatae: masculæ angustiores. *Spathella* apice ciliata, integra vel emarginata. *Perigynium* $1\frac{8}{10}$ lin. longum, $\frac{7}{10}$ lin. latum, ad basin spiculæ plus minus excurvum, rostrum oblique vel æqualiter bifidum; laciis truncatæ vcl rotundato-obtusæ, barbulatae. *Achenium* $1\frac{1}{10}$ lin. longum, $\frac{6}{10}$ lin. latum, ovale, trigonum, fuscum, angulis pallidioribus.

One of the *Indicæ*-group, with the spiculæ issuing from a *spathella* or modified perigynium, exhibiting that constant composition of spike which is occasionally only observable from almost normal perigynia in other and simpler groups.

154. *C. teres* (Boott); spicis 6-11 cylindricis elongatis teretibus approximatis nutantibus fusco-purpureis, superioribus 3-4 basi rarius apice et basi masculis, reliquis fœmineis evaginatis pedunculatis cernuis, inferiores culmo late foliaceo-bracteatis, infima interdum remota vaginata basi composita; stigmatibus 2; perigyniis (*immaturis*) ovalibus rostellatis, ore integro vel emarginato, ferrugineo-punctatis nervatis, squama oblonga truncata vel emarginata longe hispido-cuspidata medio viridi trinervi atro-purpurea latioribus brevioribusque. (TAB. CLXVII.)

HAB. In Himalaya orientali temperata, ad Sikkim, alt. 8-9000 ped., Hooker; Khasia, 5-6000 ped., Hooker et Thomson.

Culmus sub-2-ped., acutangulus, firmus, lœvis, vel superne scabriusculus, foliatus, basi rudimentis ovatis ferrugincis foliorum vaginisque reticulato-fassis tectus; pars spicas gerens 5-8 pollices longa vcl longior. *Folia* 3-4 lin. lata: superiora culmum subæquantia, plana, firma, tricostata. *Bracteæ* inferiores 2- $3\frac{1}{2}$ lin. latæ, culmo longiores: superiores demum spieis suis breviores, setaceæ. *Auriculæ* ferrugineæ, elongatæ, alligatæ. *Pedunculi* 1-6 lin. longi, graciles, lœvæ. *Spicæ* 2- $4\frac{1}{2}$ poll. longæ, 1-2 lin. latæ: infima rarius remota, subradicalis, vaginata. *Squamæ* omnes conformes. *Perigynium* (*floriferum*) $1\frac{1}{2}$ lin. longum, $\frac{7}{10}$ lin. latum. *Achenium* immaturum.

A *C. notha*, Kunth, differt, spicis pluribus, angustioribus, teretibus, superioribus 3-4 basi vel apice et basi masculis; squamis majoribus, omnibus longe hispido-cuspidatis; perigyniis ore integro, foliis bracteisque latioribus.

Though the specimens of this species are not mature, I think they are separable from *C. notha*. I have figured a perigynium (the lower one) from some imperfect specimens, found by Dr.

Hooker at Nyrung and Nunklow, which is turgid, and without the ferruginous spots, the apex occasionally subexcurred, characters which may be found in the mature *C. teres*.

155. *C. phacota* (Sprengel) ; spicis 5 rarius 4-6 linearis cylindricis pedunculatis, terminali mascula ferruginea, reliquis fœmineis, superioribus sœpe apice masculis, subcomosis erectis vel demum nutantibus contiguis evaginatis vel infima subremota exserte pedunculata fuscis ; bracteis inferioribus eulmum longe superantibus ; stigmatibus 2 ; perigyniis subrotundo-ovatis vel ovalibus rostellatis, ore integro vel emarginato, papilloso-micantibus eompressis encrviiis fuseis marginibus pallidis, squama oblonga plus minus truncata vel emarginata, subulato-hispido-que aristata ferruginea medio viridi nervata longioribus vel brevioribus.—*C. phacota*, *Spr. Syst.* iii. 826 ; *Nees, ap. Wight*, 126 ; *Kunth*, 420 ; *Drejer, Symb.* xv. t. 4. (*excl. C. punctata et C. notha.*) *C. lenticularis*, *Don, Lin. Trans.* xiv. 331 ; *Fl. Nepal.* 43 (*non Michaux*). *C. platyearpa*, *Hochst. n.* 1292 (*Pl. Ind. Or. Hohenacker*). (TAB. CLXVIII.)

HAB. In montibus tropicis et subtropicis Zeylaniae, *Gardner*. Pen. Ind. Or., Nilghiri, *Wight*; Khasia, alt. 5000 ped., *Hooker et Thomson*; Sikkim, alt. 6-7000 ped., *Hooker*; Nipal, *Wallich*, n. 3394, 3395 a, (*ex parte*); Garwhal, *Jacquemont*, n. 642. Java, *Horsfield*.

Radix fibris lignosis validis. *Culmus* 1-2½-ped., triquetus, rigidus, seaber, basi foliis vestientibus vaginisque membranaceis ferrugineis laceratis teetus; pars spicas gerens 3-7 poll. longa. *Folia* 2-3 lin. lata, plana, marginibus demum revolutis, glauco-viridia, firma, eulmum æquantia. *Bractæ* inferiores eulmum longe superantes : infima rarius plus minus vaginata : quandoque *sterilis*, remota. *Pedunculi* gracieles, seabri. *Spicæ* 1-3 poll. longæ, 1½-2½ lin. latæ : maseula eas-taneo-ferruginea, rarissime floseulis fœmineis paueis obsita : fœmineæ demum fuseæ, erectæ, vel plus minus nutantes : superiores, rarius omnes, sœpe apice maseulæ. *Squamæ* conformatæ, subulato-hispido-que aristatae, truneatae vel emarginatae vel rarius subaeutæ, fœmineæ plerumque perigynio breviores angustioresque : arista in inferioribus semper, vel in omnibus eo longior, adspicetum comosum spicas præbens. *Perigynium* 1½ lin. longum, 7-1 lin. latum, abrupte vel sensim rostellatum, ore integro vel emarginato, breve stipitatum, rarius nervis 2-3 notatum, marginibus quandoque superne paree dentatis. *Achenium* 8-9 lin. longum, 6-7 lin. latum, suborbiculatum, ferrugineum, basi styli apiculatum.

I see no essential difference in the specimens of this plant from its various localities. In the Ceylon and Nilghiri plant the scales are larger, almost concealing the perigynium ; and in the last the male spike has female flowers at the base and middle. The Lachung specimens, from Dr. Hooker, have the perigynium occasionally dentate at the margins, and the orifice emarginate. Its immediate affinity is with *C. erinita*, Lam. A specimen (five spikes) from Ceylon, and one from Lachung (six spikes), are figured in Tab. CLXVIII.

156. *C. torta* (Boott) ; spicis 4-5 rarius 3-6 cylindricis gracilibus, terminali maseula castanea rarissime altera minori, reliquis fœmineis viridi-purpureis, suprema vel omnibus sessilibus subinde apice masculis erectis vel inferioribus pedunculatis nutantibus basi verticillatim laxifloris vel attenuatis rarius compositis ; braetea infima sœpe foliacea spicam æquante vel subulata abbreviata ; stigmatibus 2 ; perigyniis ellipticis vel oblongo-ovatis rostratis, ore emarginato vel integro, plano-convexis enervis palli-

dis obliquis vel recurvis vel superne vacuis oblique tortis, squama ovata vel lanceolata obtusa purpurea nervo viridi margine albo-hyalina latioribus longioribusque.—*C. torta*, *Boott, Tuck. Enum.* p. 11 ; *Carey, Gray*, (ed. 1) 547, (ed. 2) 517 ; *Sartwell, Exs. n.* 51. *C. acuta et C. cæspitosa* (*ex parte*), *Torrey, etc.* (TAB. CLXIX.)

HAB. In America septentrionali. New England to New York.

Radix fibris lignosis ferrugineis fibrillisque capillaceis implexis. *Culmus* 1-1½-ped., gracieles, flaccides, taetu lævis, (sub lente) granulato-asperulus, basi vaginis foliorum purpureis foliisque sursum longioribus teetus ; pars spicas gerens 2-5 poll. longa. *Folia* 1-2 lin. lata, mollia, viridia, eulmo breviora. *Bractæ* infima rarius lineam lata, eulmum æquans, plerumque angustior vel setacea, spicæ suâ brevior, interdum brevissime vaginans : summa squamæformis. *Pedunculi* 2-12 lin. longi, læves. *Auriculæ* rotundatae vel elongatae, discrete vel amplectentes, ferrugineæ vel purpureæ vel pallidæ. *Spica mascula* 8-18 lin. longa, 1-1½ lin. lata, eastanea : squamæ obtusæ. *Spicæ fœmineæ* ½-4½ poll. longæ, 1½-2 lin. latæ, inter se 3-5 lin. vel 1-2 poll. remotæ. *Perigynium* 1½ lin. longum, 8-9 lin. latum, supra achenium vaeuum, eompressum, oblique tortum. *Achenium* 8-9 lin. longum, 6-7 lin. latum, suborbiculatum vel obovatum, basi styli abrupte apiculatum.

The smooth flaccid culm, the soft grassy leaves, and the tortuous empty apex of the perigynium distinguish this species from its allies.

157. *C. decidua* (Boott) ; spicis 4-6 atro-purpureis oblongis cylindricis que, terminali 1-2 mascula vel basi vel apice et basi mascula, reliquis fœmineis sœpe apice masculis simplicibus, vel omnibus vel superioribus geminatis ternatisque vel basi eompositis sessilibus, inferioribus pedunculatis evaginatis simplicibus ; bracteis culmo longioribus ; stigmatibus 2 ; perigyniis ovalibus rostellatis, ore integro, valide nervosis glabris vel superne parce ad margines denticulatis papillosis deeditus pallide ferrugineis stipitatis, squama oblongo ovata obtusa vel subaeuta atro-purpurea nervo pallido longioribus brevioribus.—*C. decidua*, *Boott, Lin. Trans.* xx. 119 ; *Fl. Antarct.* 363. *C. Andersoni*, *Boott, Hook. Fl. Ant.* 364. *C. cæspitosa*, *Solander*, *MSS. (Herb. Banks)*. (TAB. CLXX.)

HAB. Tierra del Fuego, Good Success Bay, *Banks and Sol. (Herb. Banks)*. Port Famine, *Anderson*. Falkland Islands, *J. D. Hooker*. California, *Trubner*. Oregon, *Douglas*, *Nuttall*, *Hinds*.

Culmus 1-1½-ped., lævis vel superne seaber ; pars spicas gerens 2-5 poll. longa. *Folia* 1-3 lin. lata, eulmo longiora. *Bractæ* foliaceæ : inferiores culmo longiores. *Auriculæ* subrotundæ vel amplectentes, purpureæ. *Spica terminalis* 12-14 lin. longa, 2-3 lin. lata, maseula nuna altera abbreviata ad ejus basin sita : vel androgyna basi vel apice et basi maseula. *Spicæ fœmineæ* 6-17 lin. longæ, 2-4 lin. latæ, approximatæ, omnes simplices vel geminatae ternatae : vel basi spiculis 1-2 eompositæ ; vel inferiores longiores, simplices. *Squamæ* atro-purpureæ, nervo pallido : maseulæ obtusæ, in inferioribus nervo infra apieem evanescente, in superioribus sœpe paulo exerto : fœmineæ conformatæ vel inferiores quandoque laneeolatae mueronulatae, demum deeditæ. *Perigynium* 1-8 lin. longum, 8 lin. latum, glabrum, vel ad margines paree dentieulatum, stipitatum, utrinque valide nervosum ; ore subinde leviter emarginato. *Achenium* 8 lin. longum, 7 lin. latum, lentieulare, punetulatum.

I have figured in Tab. CLXX. No. 1, a specimen from the Falkland Islands; and No. 2, specimens of Anderson from Port Famine. The last have a stouter culm and broader leaves, and two male spikes; while in Dr. Hooker's specimens from the Falklands, the terminal spike was generally androgynous. The difference is hardly specific, and I have therefore referred *C. Andersoni* to *C. decidua*. The compound spikes, deciduous squamae, and perigynia, and the occasional dentation on the margins of the perigynium, separate it from *C. vulgaris*, Fries. This species extends northwards to Oregon, where the spikes are only occasionally compound at base.

158. *C. cryptocarpa* (Meyer); spicis 4–6 oblongis vel cylindricis fusco-purpureis, omnibus pedunculatis remotis, masculis 2–3, intermedia quandoque sessili infima bracteata, foemineis 3–4 apice masculis pendulis evaginatis, vel infima subinde omnino foeminea rarius vaginata; bracteis culmum subaequantibus; stigmatibus 2; perigyniis ovalibus vcl obovatis rostellatis, ore subintegro, tenuiter nervatis coriaceis flavidis, squama lanceolata acuminato-cuspidata vel mutica brevioribus.—*C. cryptocarpa*, Meyer, Mem. Ae. St. Pet. i. 226. t. 14; Fl. Bor. Am. 219; Anderson, l. e. 41. t. 6. f. 61; Fries, Sum. 226. *C. Scouleri*, Tor. N. Am. Cyp. 399. *C. Filipendula*, Drejer, Rev. 46; Lang. Car. Ger. et Seand. 68. *C. salina*, Boott, Fl. Bor. Am. 219. (TAB. CLXXI.)

HAB. In Europa, Asia, America Boreali, et Islandia.

Culmus 1–2½-ped., triqueter, laevis, superne inter spicas scaber, inferne foliatus; pars spicas gerens 4–8 poll. longa. *Folia* 1½–2 lin. lata, culmo breviora, longe vaginantia: exsiccatione flava. *Bracteæ* foliaceæ, culmo saepè paulo longiores, evaginatae, vel infima rarius breve vaginans. *Auriculæ* purpureo-ferrugineæ, amplectentes. *Vagina* 5 lin. longa. *Pedunculi* 1–3 poll. longi, gracillimi, laeves vel basi scabri. *Spicæ* 1–1½ poll. longæ: foemineæ 3–4 lin. latæ: omnes (nisi intermedia mascula) pedunculatae. *Squamæ* lanceolatae vel ovatae, acutæ vel acuminatae, vel hispido-cuspidatae, perigynia tegentes, vel iis angustiores. *Perigynium* 1 $\frac{6}{10}$ –1 $\frac{7}{10}$ lin. longum, $\frac{8}{10}$ – $\frac{9}{10}$ lin. latum, biconvexum, glabrum. *Achenium* $\frac{8}{10}$ lin. longum, $\frac{6}{10}$ lin. latum; obovatum, plano-convexum, basi styli abrupte apiculatum, saepè ad margines indentatum.

Though Anderson places this plant in a different section, and remote from *C. salina*, Wahl., and neither he, or Meyer, or Fries, or Drejer have particularly contrasted it with that species, I know of no sufficient characters by which it can be distinguished from it. Schkuhr's f. n. 185 of *C. salina* represents the smaller form of *C. cryptocarpa*. Anderson remarks, "Fructus squamis nunc obtecti, nunc iis fere latiores, quare nomen *cryptocarpa* minus aptum videtur." Drejer also says of his *C. Filipendula*, "squamæ perigynii angustiores." At the time of my arranging the *Carices* for the Flor. Bor. Americana, I was puzzled how to distinguish the specimens collected by Tolmie, and referred those from Clemencyt Harbour to *C. cryptocarpa*, and those from Hood's Canal to *C. salina*. The former are not mature, and exactly agree with Meyer's figure. I should refer both to *C. salina*, β , of Wahlenberg. I have figured one of the specimens from Hood's Canal (the right-hand figure). The other is from Kamtschatka, collected by Mr. Peters. The "squamæ muticæ vel cuspidatae" are characteristic of both plants, and the place of growth on the sea-shore is the same. If I am correct in my view, while Meyer's excellent figure represents the *C. salina*, β , *mutica*, that here given, Tab. CLXXI., would represent the var. *cuspidata* of the same species.

159. *C. ambusta* (Boott); spicis 3–4 fusco-purpureis approximatis terminalibus 2, masculis oblongo-cylindricis, infima sessili, reliquis foemineis oblongis crassis pedunculatis evaginatis erectis vel infima nutanti; bractea

infima culmum paulo superante; stigmatibus 2, longis; perigyniis oblongo-ovatis rostellatis, ore obliquo scabrido purpureo, inferne biconvexis superne vacuis compressis, cnerviis vel 1–2-nervatis marginibus parce denticulatis flavidis spongiosis, squama ovata obtusa vel acuta mutica fusco-purpurea apice albo-membranacea nervo concolori angustioribus brevioribusque. (TAB. CLXXII.)

HAB. Sitcha?

Culmus subpedalis, strictus, firmus, aeutangulus, scaberrimus; pars spicas gerens 2½–4 poll. longa. *Folia* 1½–2 lin. lata, culmo longiora vel breviora, firma, marginibus revolutis. *Bracteæ* infima culmum paulo superans. *Auriculæ* purpureæ. *Pedunculi* apice scabri: infimus 1–1½ poll. longus. *Spicæ masculæ* 7–12 lin. longæ, 1–1½ lin. latæ, contiguae: infima sessilis, ebracteata, vel subsessilis, bractea breve cuspidata. *Spicæ foemineæ* 9–10 lin. longæ, 4–5 lin. latæ, 1–2: infima longius pedunculata, nutans. *Squamæ* fusco-purpureæ, apice albo-membranaceæ, nervo unico concolori, muticæ: masculæ obtusæ, foemineæ inferiores subacutæ. *Perigynium* 1 $\frac{6}{10}$ –1 $\frac{8}{10}$ lin. longum, $\frac{8}{10}$ lin. latum. * *Achenium* 1 lin. longum, 1 $\frac{7}{10}$ lin. latum, obovatum, pallidum, basi styli subincrassata apieulatum.

A *C. Sitchensi*, Prescott, differt, spicis oblongis, squamis obtusis muticis; perigynii ore obliquo.

A *C. cryptocarpa*, Meyer, spicis masculis sessilibus; perigyniis ovatis, denticulatis, subnervatis; culmo scabro.

I am indebted to my friend Mr. Heward for this plant, which he received (from Herb. Prescott) from the late Mr. Fielding. There was no habitat given, but I cannot doubt that it is from Sitcha or its neighbourhood. Its nearest affinity is with *C. Sitchensis*, Prescott, from which it differs in its fewer and oblong spikes, the lower of which are entirely female, and in its ovate perigynium, the orifice of which is oblique and one-lobed. The upper part of the perigynium, above the achene, is compressed, the lower part taking the biconvex form of the achene.

160. *C. lucida* (Boott); spicis 5–8 erectis, mascula 1 vel 2–3, suprema elongata gracili ferruginea rarius apice foeminea, reliquis foemineis ferrugineo-purpureis, superioribus sessilibus oblongis saepè abbreviatis, inferioribus subinde ima basi masculis cylindricis remotis longissime bracteatis inserte vel exserte pedunculatis; stigmatibus 2, rarius 3; perigyniis ovatis vel ovalibus vel subrotundis rostratis bifidis atro-purpureis basi rostroque pallidis lucidis obsolete nervatis glabris vel rarius apice marginibus scabriuscis corneis biconvexis, squama ovata acuta vel obtusa rarius emarginata eiliata hispido-cuspidata firma ferrugineo-purpurea nervo pallida longioribus vel brevioribus.—*C. lucida*, Boott, Hook. Fl. N. Zeal. 283. *C. pulla*, Solander, MSS. (Herb. Banks). (TAB. CLXXIII.)

HAB. In Nova Zelandia. Prope Tigadu, Opuragi, Totaranui, Banks et Solander, 1769. (Herb. Banks). Bay of Islands, Sinelair, Colenso, Stephenson, Captain Wilkes, Dr. Hooker (Herb. Hooker). Wellington, Ralph. Auckland, Sinelair.

Culmus gracilis, superne saepè filiformis, laevis, apice scaber, rigidus, basi foliis vestientibus rudimentisque foliorum purpureis tectus; pars spicas gerens 10–15 poll. longa. *Folia* plana, carinata, lineam lata, vel conduplicata, culmo longiora, rigida. *Bracteæ* inferiores vaginatae, longissimæ, saepè sesquipedales: superiores setaceæ, culmo longiores. *Vaginæ* inferiores 1–2 poll. longæ. *Pedunculi* scabri: inferiores plus minus exserti. *Spicæ masculæ* 1–3: suprema 1–2 poll. longa, $\frac{1}{2}$ –1 lin. lata.

Spicæ fœmineæ $\frac{1}{2}$ – $1\frac{1}{2}$ poll. longæ, 3 liu. latæ: superiores sessiles, saepe abbreviatæ, rotundæ, rarius apice masculæ: inferiores inter se 3–8 poll. remotæ, ima basi attenuatæ, parce masculæ; insertæ vel plus minus exsertæ pedunculatæ: infima quandoque basi spicula minima composita. *Squamæ* omnes ovatæ, ferrugineo-purpureæ, demum pallidiores, cuspidatæ, firmæ: fœmineæ inferiores saepe emarginatæ. *Perigynium* $1\frac{2}{10}$ – 7 lin. longum, $\frac{6}{10}$ – $\frac{7}{10}$ lin. latum, ovatum vel ellipticum, sensim rostratum; vel subrotundum, abrupte rostratum, emarginato-bifidum, laciniis scabris. *Achenium* $\frac{8}{10}$ lin. longum, $\frac{6}{10}$ lin. latum, lenticulare vel triquetrum, punctulatum, fuscum. *Stigmata* 2, rarius 3. *Stylus* basi oblique tortus.

Affinis *C. paleatae*, B. Differt spicis brevioribus, purpureis; perigyniis ovatis; foliis angustioribus, saepe conduplicatis.

161. *C. pruinosa* (Boott); spicis 5 oblongo-eylindraceis contiguis, terminali mascula clavata sessili ferruginea, reliquis fœmineis pedunculatis evaginatis griseo-ferrugineis, superioribus apice masculis, inferioribus longissime bracteatis cernuis; stigmatibus 2; perigyniis late ovatis rostellatis, ore integro, nervatis albo-tuberculatis griseis, squama ovato-lanceolata acuta cuspidata ferruginica nervo viridi latioribus longioribusque.—*C. pruinosa*, Boott, *Lin. Trans.* xx. 131. (TAB. CLXXIV.)

HAB. In Java, *Herb. Horsfield*.

Culmus 3-ped., laevis, triqueter, subvalidus, inter spicas scaber; pars spicas gerens biuncialis. *Folia* $1\frac{1}{2}$ –2 lin. lata, culmo breviora, glauco-viridia, firma, apice serrato-scabra. *Bractæ* 2 inferiores 8–10 poll. longæ, crectæ; reliquæ spicis suis breviores. *Spica mascula* subpollicaris, $1\frac{1}{2}$ lin. lata: reliquæ 8–14 lin. longæ, 2–3 lin. latæ: superior sessilis: inferiores breve pedunculatæ. *Squamæ* omnes conformes, ferrugineæ: fœmineæ inferiores longius cuspidatæ: masculæ saepe muticæ. *Perigynium* $1\frac{7}{10}$ lin. longum, $1\frac{1}{10}$ – $1\frac{2}{10}$ lin. latum, 3–4-nervatum, tuberculis albis minimis conspersum, quasi pruinosum. *Achenium* orbiculatum, $\frac{8}{10}$ lin. longum et latum, lenticulare, basi styli apiculatum, pallidum.

Though there is an external resemblance in this species to *C. glaucescens*, Ell., its affinity is with *C. crinita*, Lam. I know of no East Indian species to which it is more immediately allied, unless it may be to *C. cæspititia*, Nees, of which we have no specimens sufficiently mature for a satisfactory character.

162. *C. Solandri* (Boott); spicis 6–7 cylindricis, masculis 1–4 gracilibus ferrugineis eontiguis, reliquis androgynis basi clavatis masculis remotis exserte pedunculatis longe bracteatis simplicibus vel inferioribus plerumque compositis nutantibus ferrugineo-purpureis; stigmatibus 3; perigyniis oblongo-ovatis vel ovalibus rostratis bidentatis obsolete nervatis atro-purpureis lucidis subcoriaceis glabris vel superne marginibus scabriusculis, squama ovata acuta vel emarginata hispido-cuspidata ferruginea longioribus vel brevioribus.—*C. Solandri*, Boott, Hooker, *Fl. N. Zeal.* 284. *C. debilis*, Solander (*Herb. Banks*), non Michaux nec Forster. (TAB. CLXXV.)

HAB. In Nova Zelandia, prope Totaranui, Opuragi, Motuaro, *Banks et Solander*, 1769 (*Herb. Banks*), Stephenson, Colenso, Ralph (*Herb. Hooker*).

Culmus $1\frac{1}{2}$ –3-ped., superne filiformis, laevis, inter spicas scaber; pars spicas gerens 6–18 poll. longa. *Folia* $1\frac{1}{2}$ –2 lin. lata, culmo longiora, carinata, firma. *Bractæ* vaginatæ, culmo longiores: supremæ setaceæ. *Vagine* 3 lin. ad $2\frac{1}{2}$ poll. longæ. *Pedunculi* $\frac{1}{2}$ –4 poll. longi, filiformes, dcbiles. *Spica mascula* suprema 1–3 poll. longa, lineam lata: reliquæ bre-

viore, sessiles: infima subinde apicem extremo fœminea. *Spicæ androgynæ* 1– $1\frac{1}{2}$ poll. longæ, 2– $2\frac{1}{2}$ lin. latæ: suprema basi subdimidiatim mascula: superiores approximatæ: inferiores $2\frac{1}{2}$ –6 poll. remotæ, nutantes, longe exscerte pedunculatæ, simplices vel inferiores, basi spiculis 1–5 brevibus alternis compositæ: omnes basi masculæ. *Squamæ* superiores ovatæ, acutæ: inferiores leviter emarginatæ, sinu parvo, nervosæ, medio trinerves, hispido-cuspidatæ, ferrugineæ. *Perigynium* $1\frac{4}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, leviter vel obsolete nervatum: nervis superne evanidis. *Achenium* $\frac{6}{10}$ lin. longum, $\frac{4}{10}$ lin. latum, obovato-triquetrum, pallidum, punctulatum, basi styli apiculatum.

A *C. lucida* et affinibus differt, spicis gracilioribus, nutantibus, inferioribus plerumque compositis, superioribus basi magis conspicue masculis; squamis superioribus acutis vel leviter emarginatis.

163. *C. dissita* (Solander); spicis 5–7 oblongis ferrugineis, mascula 1–2 sessili saepe abbreviata (vel 3–4 masculis sec. Solander), reliquis androgynis ima basi attenuatis masculis, superioribus contiguis sessilibus, inferioribus remotis exserte pedunculatis longe foliaceo-bracteatis, infima subinde cernua; stigmatibus 3; perigyniis ovatis vel obovatis basi attenuatis rostratis bifurcatis utrinque nervatis, marginibus saepe e medio sursum aculeato-serratis rubro-ferrugineis basi pallidis subcoriaceis, squama ovata emarginata hispido-cuspidata nervosa medio viridi trinervi purpurea demum ferruginea longioribus.—*C. dissita*, a, Solander MSS. (*Herb. Banks*), Hooker, *Fl. N. Zeal.* 284. (TAB. CLXXVI.)

HAB. In Nova Zelandia, prope Tigadu, Opuragi, Banks et Solander, 1769 (*Herb. Banks*); Auckland, Sinclair, Colenso, n. 170; Bay of Islands, Capt. Wilkes.

Culmus 1–3-ped., gracilis, laevis, apice filiformis, scaber; pars spicas gerens 9–12 poll. longa. *Folia* 2 lin. lata. *Bractæ* vaginatæ, culmo longiores. *Vagine* 2 lin. ad $1\frac{1}{2}$ poll. longæ. *Pedunculus* infimus $1\frac{1}{2}$ –4 poll. longus, gracilis, scaber. *Spica mascula* 6–11 lin. longa, $1\frac{1}{2}$ –2 lin. lata, sessilis; altera minor bracteata saepe ad ejus basin sita (vel 3–4, sec. Solander). *Spicæ* reliquæ 4–12 lin. longæ, 2–3 lin. latæ, ima basi parce masculæ: inferiores a se 1–9 poll. remotæ: infima quandoque cernua. *Squamæ* ovatæ, emarginatæ, cuspidatæ, nervosæ, purpureæ, demum ferruginea, medio virides, nervis 3, prominentibus, pallidis. *Perigynium* $1\frac{3}{10}$ – 5 lin. longum, $\frac{7}{10}$ – $\frac{8}{10}$ lin. latum, ovatum vel obovatum vel ovale, rostratum, bifurcatum; laciniis plus minus longis, acutis, scabris vel marginibus superne aculatis; pallidum, demum atro-purpureum, lucidum, nervosum. *Achenium* $\frac{7}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, obovato-triquetrum, pallidum, basi styli apiculatum.

164. *C. Lambertiana* (Boott); spicis 4–6 cylindricis stricte erectis, terminali mascula sessili clavata bracteata, reliquis androgynis ima basi attenuatis masculis, superioribus approximatis, inferioribus remotis exserte pedunculatis longe bracteatis; stigmatibus 3; perigyniis ovalibus vel lanceolatis rarius obovatis rostratis bifidis nervatis glabris vel apice plus minus marginibus scabris ferrugineis vel atro-purpureis subcoriaceis lucidis, squama emarginata hispido-cuspidata ferruginea medio pallida trinervi brevioribus vel longioribus.—*C. Lambertiana*, Boott, Hooker, *Fl. N. Zeal.* 284. *C. dissita*, β, Solander MSS. “*Spica* mascula unica. Gramen est majus, alias simillimum forte distincta species.” Solander MSS. (*Herb. Banks*). (TAB. CLXXVII.)

HAB. In Nova Zelandia, prope Totaranui, Banks et

Solander, 1769; *Auckland*, *Sinclair*, *Ralph*; Bay of Islands, *Captain Wilkes*.

Culmus validus, laevis, vel apice seaber; pars spicas gerens 4–12 poll. longa. *Folia* 3 lin. lata, culmo longiora, rigida. *Bracteæ* vaginatæ, eulmo longiores. *Vagina* infima 1–2 poll. longa. *Pedunculi* validi, sebri: inferiores saepe longe exserti: infimus 3 poll. longus. *Spica* mascula 7–12 lin. longa, 1–2 lin. lata, elavata: reliquæ cylindricæ, $\frac{1}{2}$ –2 poll. longæ, 3–4 lin. latae, striete erectæ, a se 1–4 poll. remotæ. *Squamæ* omnes emarginatae (sinu lato), hispido-euspidatae. *Perigynium* (in una eademque spica) saepe insigniter varians; ovale vel obovatum, $1\frac{4}{5}$ lin. longum, $\frac{7}{10}$ lin. latum, squama brevius: vel laneeolatum, $1\frac{8}{10}$ – $2\frac{1}{2}$ lin. longum, $\frac{6}{10}$ lin. latum, squama longius: bifidum, laciniis sebris: nervatum, glabrum vel marginibus plus minus sebris. *Achenium* $\frac{7}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, triquetro-obovatum vel $1\frac{1}{2}$ lin. longum, lineare: basi styli contorta apiculatum, ferrugineum, punetulatum.

A *C. dissita* differt, eulmo validiori; foliis latioribus; spicis cylindricis, striete erectis, maseula unica; perigyniis minus alte bifidis, saepe laneeolatis; squamis majoribus, sinu latiori.

I received this species in 1837 from the late A. B. Lambert, Esq., before I had seen the descriptions of the New Zealand *Carices* by Solander in Herb. Banks. Whether future observation will establish its specific distinction from *C. dissita* I am in doubt. If it should merge into that species it should be considered as the typical form, from its ampler development. I have never seen more than one male spike. The perigynia are less deeply bifid, and are often glabrous. Solander, in his description of *C. dissita*, takes no notice of the male florets at the base of the lower spikes, a character that is common to several of the New Zealand *Carices*, and to *C. paleata* of Juan Fernandez.

165. *C. æquabilis* (Boott); spicis 7 cylindricis elongatis gracilibus erectis pallidis concoloribus laxiuscule florifcris, terminalibus 3 basi masculis sessilibus contiguis, reliquis foemineis deorsum remotioribus longiusque exscrc pedunculatis basi attenuatis; bracteis culmo brevioribus; stigmatibus 3; perigyniis ovali-lanceolatis sensim acuminato-rostratis bifurcatis plano-subconvexis crebre æqualiterque nervosis pallidis purpureo-inaculatis glabris erectis, squama ovata acuminata vel cuspidata pallida purpurco-maculata nervosa longioribus.—*C. longifolia*, *Herb. D. Turner!* “caespitosa, culmi foliis breviores.” (TAB. CLXXVIII.)

Hab. In insula St. Helena, in umbrosis sylvaticis montis High Peak (*Herb. Hooker*).

Culmi sub-3-pedales, rigidi, laeves; pars spicas gerens 18 poll. longa. *Folia* 3 lin. lata, eulmo longiora. *Bracteæ* vaginatæ: inferiores spicas suis longiores. *Vagina* infima 2 poll. longa. *Pedunculus* infimus 6 poll. longus, laevis. *Spicæ* 1–3 poll. longæ, $1\frac{1}{2}$ lin. latæ, pallide stramineæ, eoneolores. *Squamæ* pallidæ, nervosæ: foemineæ ovatae vel ovales: masculæ laneeolatae. *Perigynium* 2 lin. longum, $\frac{6}{10}$ lin. latum. *Achenium* 1 lin. longum, $\frac{1}{2}$ lin. latum, plano-subtriquetrum, stipitatum, fuscum, angulis pallidis. *Stylus* rectus, basi incrassatus.

Allied in some respects to the simpler forms of *C. Boryana*, Schk., but differing essentially from that variable species in the terminal spikes being male at base, and the lower ones all female, and in the incrassate base of the straight style.

166. *C. præalta* (Boott); spicis 9 cylindricis erctis densifloris, terminalibus 4 masculis pallidis, reliquis foemineis apice masculis viridibus, suprema sessili, proximis 3 contiguis inolute vaginatis, infima remota longe exserta

pedunculata; bractea infima culmum superante; stigmatibus 3; perigyniis lanceolatis sensim acuminato-rostratis bifurcatis plano-subtriquetris crebre nervosis viridibus basi rostroque pallidis glabris demum oblique divergentibus, squama ovata acuta hispido-cuspidata pallida nervosa longioribus.—*C. elata*, *Herb. D. Turner!* “culmi gracie, 4–6-pedales, foliis longiores.” (TAB. CLXXIX. et CLXXX.)

HAB. In insula St. Helena, in umbrosis sylvaticis montium Diana's Peak et Halley's Mount (*Herb. Hooker*).—Var. β . (*C. peduncularis* et *C. pedunculata*, *Pritchard's List*) “among grass on the summit of Diana's Peak, 3000 feet, rare, February, 1849,” *J. D. Hooker* (*Herb. Hooker*).

a. *Culmus* firmus, laevis; pars spicas gerens 12 poll. longa. *Folium* culmi supremum solum adest, 3 lin. latum. *Bractea* infima 2 lin. lata, eulmum paulo superans: superiores angustæ, spicas suis longiores, omnes nisi suprema vaginatæ. *Vaginæ* 2 lin. ad $1\frac{1}{2}$ poll. longæ. *Pedunculus* infimus 3 poll. longus, laevis. *Spicæ* masculæ 7 lin. ad 2 poll. longæ, $\frac{1}{2}$ – $1\frac{1}{4}$ lin. latæ, extremae longiores, 3 superiores contiguae: infima subremota, brevæ bracteata. *Spicæ* foemineæ $1\frac{1}{2}$ – $2\frac{1}{2}$ poll. longæ, 3 lin. latæ: superiores contiguae, inolute pedunculatae: infima 6 poll. remota, omnes, nisi suprema (quæ conspicue), apice parce masculæ. *Squamæ* maseulæ longiores, acuminatae, hispido-cuspidatae: foemineæ superiores, lanceolatae, euspidatae: inferiores breviores. *Perigynium* $2\frac{1}{10}$ – $3\frac{1}{10}$ lin. longum, $\frac{5}{10}$ lin. latum, nervis quibusdam saepe confluentibus. *Achenium* $1\frac{2}{10}$ lin. longum, $\frac{4}{10}$ – $\frac{5}{10}$ lin. latum, ellipticum, triquetrum, stipitatum. (TAB. CLXXIX.)

Var. β ; spicis 8, terminalibus 4 masculis, reliquis apice plus quam dimidiatim masculis, infima apice et basi mascula vel sterili; perigyniis brevioribus latioribus $1\frac{6}{10}$ – $\frac{8}{10}$ lin. longis $\frac{6}{10}$ – $\frac{7}{10}$ lin. lati; foliis $2\frac{1}{2}$ –3 lin. lati vix culmum æquantibus basi involutis vaginatis fusco-rubris margine filamentosis. (TAB. CLXXX.)

This species more nearly approaches some forms of *C. Boryana*, in which the terminal spikes are male, but it seldom has any so rigidly erect.

167. *C. tumida* (Boott); spicis 3–5 linearibus cylindricis tcretibus elongatis erectis, terminali mascula gracillima sessili pallida, reliquis foemineis exscrc pedunculatis longe bracteatis, inferioribus remotis fusco-olivaceis; stigmatibus 3; perigyniis triquetro-ovalibus longe rostratis, rostro medio tumente, ore pallido emarginato, nervatis oblique adscendentibus, squama pallida lanceolata acuta vel obtusa longe hispido-aristata latioribus brevioribusque. (TAB. CLXXI.)

HAB. In Himalaya orientali temperata. Sikkim, alt. 8–10,000 ped., *J. D. Hooker*.

Culmus 2– $2\frac{1}{2}$ -ped., triquetra, subgracilis, seaber, inferne foliatus; pars spicas gerens 6–15 poll. longa. *Folia* 2–3 lin. lata, plana, eulmo longiora. *Bracteæ* vaginatæ, 2–3 lin. latæ, eulmo longiores: infima subpedalis. *Vagina* infima 1– $2\frac{1}{2}$ poll. longa: suprema 4 lin. longa. *Ligula* pallida. *Pedunculus* infimus 2–4 poll. longus, rigidus, seaber. *Spica* mascula 1–2 poll. longa, $\frac{1}{2}$ lin. lata, bracteata: foemineæ $1\frac{1}{2}$ –3 poll. longæ, $2\frac{1}{4}$ lin. latæ; superiores contiguae, vel omnes a se $2\frac{1}{2}$ –6 poll. remotæ. *Squamæ* omnes aristatae: maseulæ inferiores longius aristatae. *Perigynium* $1\frac{6}{10}$ lin. longum, $\frac{6}{10}$ lin. latum, fuscous-olivaceum; rostro superne pallido, medio demum tumido:

membranaceum, leviter nervatum. *Achenium* lineam longum, $\frac{6}{10}$ lin. latum, perigynio conforme, ovali-triquetrum, pallidum, basi styli persistente apiculatum.

C. olivacea affinis, quæ differt spicis pluribus, longioribus, evaginatis; foliis latioribus; perigyniis ventricosis, divaricatis, rostro breviori; bracteis longissimis.

The peculiar tumidity of the rostrum in this species appears to depend on the shrinking of the membranous apex and of the base, in the more mature state of the perigynium.

168. *C. Beecheyana* (Boott); spicis 5–6 cylindricis erectis densifloris purpureis vel ferrugineis comosis, terminalibus 2 masculis, reliquis foemineis, suprema subinde apice mascula, superioribus sessilibus evaginatis approximatis, infima saepe remota longe exserte pedunculata basi attenuata longissime bracteata; stigmatibus 3; perigyniis ellipticis sensim attenuato-rostratis bifidis obtuse trigonis setis brevibus scabris, nervatis coriaceis ferrugineis, squama lanceolata acuminata vel obtusa longe hispido-cuspidata purpurea longioribus.—*C. hebecarpa*, Hooker, *Beechey*, Voy. 50 (non Meyer). *C. Hookeri*, Kunth, 490 (non Dewey). (TAB. CLXXXII.)

HAB. In America meridionali. Chili, Concepcion, Captain Beechey. Valdivia, Gay.

Culmus $1\frac{1}{2}$ -ped., triquetter, validus, laevis, inter spicas scaber; pars spicas gerens 6–15 poll. longa. *Folia* 3 lin. lata, nodosa. *Bractæ* culmo longiores: infima vaginata, nunc sesquipedalis. *Vagina* 4 lin. ad $1\frac{1}{2}$ poll. longa. *Pedunculus* infimus 1–4 poll. longus, laevis. *Spica mascula* suprema $1\frac{1}{2}$ – $2\frac{1}{2}$ poll. longa, $2\frac{1}{2}$ – $3\frac{1}{2}$ lin. lata, altera arcta contigua, sessilis. *Spicæ foemineæ* 1–2 poll. longæ, 4–5 lin. latæ: infima interdum 7 poll. remota. *Squamæ* omnes conformes: masculæ inferiorcs brevius cuspidatæ. *Perigynium* $2\frac{8}{10}$ lin. longum, $\frac{8}{10}$ lin. latum, intus (dempto achenio) punctis nigris notatum. *Achenium* $1\frac{1}{10}$ lin. longum, $\frac{6}{10}$ lin. latum, ovali-triquetrum, basi styli contorta apiculatum, punctulatum.

The rostrum of this species is commonly more elongated than the figure exhibits it. Its affinity is with *C. lanuginosa*, Michaux.

169. *C. æmathoryncha* (Desvaux); spicis 4 cylindricis erectis approximatis densifloris, terminalibus 2 masculis purpureis, reliquis foemineis evaginatis purpureo-ferrugineis, infima pedunculata; bractea culmum subæquante; stigmatibus 3; perigyniis ovatis rostratis emarginato-bidentatis, setis longis asperrimis, nervatis ferrugineis basi pallidis, rostro purpureo, squama lanceolata vel ovata acuminata acuta purpurea longioribus vel paulo longioribus.—*C. æmathoryncha*, Desv. *Fl. Chil.* vi. 224. (TAB. CLXXXIII. Fig. 1.)

HAB. In America meridionali. Chili, humid. arenos., ad Talcahuano, Paepig. Valdivia, near rivers, Gillies, 854 (Herb. Hooker).

Culmus $1\frac{1}{4}$ -ped., triquetter, gracilis, scaber; pars spicas gerens 4 poll. longa. *Folia* 1–2 lin. lata, culmum subæquantia, firma, carinata, pallide viridia. *Bractæ* infima angusta, evaginata, culmo paulo longior: summa spicæ suâ longior. *Auriculae* purpureæ. *Spicæ masculæ* 8–16 lin. longæ, 1–2 lin. latæ. *Spicæ foemineæ* 13–17 lin. longæ, 3 lin. latæ, contiguae. *Squamæ* masculæ infriores obtusæ, rotundatæ, purpureæ, nervo pallido infra apicem evanescente, ciliatæ, margine albidae; superiores nervo egrediente apiculatae: foemineæ inferiores lanceolatae, perigynio longiores: superiores ovatæ, acutæ. *Perigynium* $1\frac{8}{10}$ – 2 lin. longum, $\frac{8}{10}$ lin. latum, intus (dempto

achenio) maculatum. *Achenium* $\frac{8}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, ovalc, triquetrum, basi styli contorta apiculatum.

Affinis *C. Beecheyanae*, differt culmo graciliori; foliis angustioribus, nec nodosis; perigyniis minoribus, ovatis, setis longis asperrimis; squamis masculis obtusis, muticis, ciliatis, foemineis acuminatis.

170. *C. verticillata* (Boott); spicis 5–6 gracilibus, terminali mascula, reliquis foemineis, superioribus apice masculis oblongis erectis sessilibus densifloris, infima pendunculata evaginata cernua basi attenuata, flosculis verticillatim dispositis; bractea infima foliacea culmo breviori; stigmatibus 2; perigyniis minimis orbiculatis vel ovalibus abrupte cylindrico-rostratis, ore integro, enerviis superne ad margines saepe dentatis compresso-biconvexis, squama ovata obtusa fusco-purpurea nervo pallido brevioribus.—*C. angustata*, var. *verticillata*, Boott, *Fl. Bor. Am.* 218. (TAB. CLXXXIII. Fig. 2.)

HAB. In America septentrionali. Columbia River, Scouler. Oregon, Nuttall.

Radix stolonifera. *Culmus* $1\frac{1}{2}$ -ped., gracilis, laevis, inter spicas scaber, basi foliatus, rudimentisque foliorum fusco-purpureis tectus; pars spicas gerens 4–5 poll. longa. *Folia* 1– $1\frac{1}{2}$ lin. lata, culmo breviora, mollia, plana, viridia. *Bractæ* infima foliacea, culmum subæquans, vcl brevior: proxima nunc culmo vel spicæ suâ (sæpe multum) brevior: superiores obsoletæ. *Auricula* oblonga. *Spica mascula* 8–12 lin. longa, $1\frac{1}{2}$ –2 lin. lata. *Squamæ* fusco-ferrugineæ, obtusæ. *Spicæ foemineæ* $\frac{1}{2}$ –3 poll. longæ, 2 lin. latæ, densifloræ, erectæ vel infima cernua, breve pedunculata; flosculis inferne verticillatim interruptis. *Squamæ* ovatae, obtusæ, fuscae vel concolores vel nervo pallido infra apicem evanescente. *Perigynium* $\frac{7}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, glabrum vcl superne ad margines parce dentatum, glauco-viride, demum fuscum. *Achenium* $\frac{6}{10}$ lin. longum, ferc $\frac{1}{2}$ lin. latum, perigynio conformatum, orbiculatum, fuscum, basi styli abrupte apiculatum.

A *C. torta* satis, notis pluribus, distincta, et affinibus omnibus, perigyniis minoribus, spica infima vel inferioribus basi verticillatim interruptis. Ad *C. strictam*, Lam. (non Good.), proprius accedit, quæ tamen spicis appressis, squamis linearibus, vaginis foliorum reticulato-fissis, perigyniis nervatis, gaudet.

171. *C. indecora* (Kunth); spicis 3–6 oblongis erectis ferrugineo-purpureis, terminali mascula sessili, reliquis foemineis subinde apice masculis, superioribus vel omnibus masculæ contiguis evaginatis sessilibus, vel infima remota inserte vel exserte pedunculata; bracteis superioribus culmo longioribus; stigmatibus 3; perigyniis oblongo-ovalibus vel ovatis obtuse trigonis sensim attenuato-rostratis bidentatis, nervis 2 marginalibus, aliis saepe inconspicuis, lutescenti-viridibus lineolis maculatis rubro-purpureis notatis lucidis glabris vel superne ad margines plus minus serratis, squama ovata acuta vel subrotunda obtusa vel emarginata valide hispido-cuspidata rubro-purpurea nervo pallido longioribus.—*C. indecora*, Kunth, *Cyp.* 448; Hooker, *Fl. Antarct.* 367. *C. distenta*, Kunze, Kunth, 449. *C. fuscula*, D'Urv., Brong., Dup. It. 154. t. 28 b. *C. hymenina*, Nees, MSS. (Herb. Hooker). *C. inconspicua*, Steudel (Herb. Mus. Paris.). *C. brachycephala*, Paepig (Herb. Mus. Paris.). (TAB. CLXXXIV.)

HAB. In America meridionali. Ins. Falkland., Valparaiso, Cuming, 419, 458; Paepig. Valdivia, Gay,

Gillies, 834; *Lechler*, 695. Santiago, ins. Chiloe, *Gay*, Falkland Islands, *D'Urville*, *Dr. Hooker*.

Culmus $\frac{1}{2}$ - $1\frac{1}{2}$ -ped., obtusangulus, lavis; pars spicas gerens $\frac{1}{2}$ -5 poll. longa. *Folia* $1\frac{1}{2}$ -2 lin. lata, culmo breviora, plana, rigida. *Bracteæ* superiores vel omnes culmo longiores, erectæ: inferiores vaginatæ. *Vaginæ* 2-7 lin. longæ. *Pedunculus* infimus 6-12 lin. longus, scaber. *Spica mascula* 3-8 lin. longa, 1- $1\frac{1}{2}$ lin. lata. *Spicæ fœmineæ* 4-9 lin. longæ, 3 lin. latæ: omnes masculæ contiguae, vel infima 1-5 poll. remota. *Squamæ* omnes plus minus valide hispido-cuspidatae: masculæ obtusissimæ vel emarginatae. *Perigynium* $1\frac{5}{6}$ - $1\frac{9}{6}$ lin. longum, $\frac{5}{6}$ - $\frac{7}{6}$ lin. latum. *Achenium* $\frac{9}{6}$ lin. longum, $\frac{5}{6}$ - $\frac{6}{6}$ lin. latum, oblongo-ovale vel obovatum, triquetrum, castaneum, basi styli apiculatum.

A *C. extensa*, Good., differt, perigyniis leviter nervatis; squamis omnibus cuspidatis; foliis bracteisque erectis, planis.

This species varies in the form, degree of nervation, and smoothness of the perigynium, and in the form of the squamæ. I am indebted to M. Spach for a specimen of the *C. inconspicua*, Steudel, which in no respect differs from those of Cuming, Gay, and Dr. Hooker.

172. *C. Gunniana* (Boott); spicis 4-5 oblongis vel cylindraceis erectis, terminali mascula clavata sessili straminea, reliquis fœmineis pallide flavescenti-viridibus, superioribus 1-2 sessilibus masculæ arcte contiguis, inferioribus exserte pedunculatis, infima remota saepe nutante; bracteis superioribus culmo longioribus; stigmatibus 3; perigyniis elliptico-ovatis trigonis sensim acuminato-rostratis bidentatis ventricosis nervatis superue ad margines scabris flavescenti-viridibus demum punctis nigrescentibus maculatis, squama late ovata acuta vel obtusa plus minus hispido-cuspidata ferruginea nervo scabro longioribus.—*C. Gunniana*, Boott, Lin. Trans. xx. 143. (TAB. CLXXXV.)

HAB. In Tasmania, *Gunn*, n. 578.

Culmus 1-2-ped., triqueter, lavis; pars spicas gerens 4-18 poll. longa. *Folia* 2-4 lin. lata, culmo longiora, plana. *Bracteæ* superiores, vel omnes culmo longiores. *Vagina* infima 1-2 poll. longa. *Pedunculus* infimus 3-5 poll. longus, gracillimus, scaber: superioris inserti vel paulo exserti. *Spica mascula* 5-15 lin. longa, 1-2 lin. lata, saepius clavata, obliqua, sessilis. *Spicæ fœmineæ* 5-18 lin. longæ, 3-4 lin. latæ: infima subinde sub-10-12 poll. remota, erecta vel saepe nutans. *Squamæ* conformes: masculæ longiores. *Perigynium* $2\frac{2}{3}$ - $2\frac{8}{6}$ lin. longum, lineam latum, punctis nigrescentibus (sub lente) demum notatum. *Achenium* (cum stipite $\frac{2}{6}$ lin. longo) $1\frac{4}{6}$ lin. longum, $\frac{8}{6}$ lin. latum, triquetro-ovatum, fuscum, angulis pallidioribus, punctulatum, basi styli abrupte apiculatum.

Ad *C. levigatum*, Sm., et ejus affines accedit.

173. *C. Preissii* (Nees); spicis 4-6 erectis glauco-viridibus vel demum stramineis, terminali mascula vel ima basi fœminea cylindrica vel clavata sessili, reliquis apice masculis oblongis, superioribus 1-2 sessilibus masculæ arcte contiguis, inferioribus remotis longiuscule exserte pedunculatis, infima subradicali, rarius omnino fœminea; bracteis foliaceis, superioribus culmo saepe paulo longioribus; stigmatibus 3; perigyniis oblongo-ellipticis plano-triquetris sensim rostellatis, ore pallido bidentato, superne marginibus serratis nervatis glauco-viridibus vel stramineis saepe purpureo-punctatis, squama ovata hispido-acuminata glauca vel straminea concolori

medio nervata saepe punctata longioribus.—*C. Preissii*, Nees, Lehmann, Pl. Preissianæ, ii. 94 (1846). *C. thecata*, Boott, Lin. Trans. xx. 143 (1846). (TAB. CLXXXVI.)

HAB. In Australia, in arenosis. Prope Pointwater, ins. Rottnest, *Preiss*. Swan River, *Drummond*.

Cæspitosa. *Culmus* subpedalis, gracilis, triqueter, scaber, usque ad basin spicifer. *Folia* 1- $1\frac{1}{2}$ lin. lata, culmum subæquantia, firma, carinata. *Bracteæ* inferiores culmo breviores, vaginatæ: superiores saepe eo longiores. *Vaginæ* scabræ: infima subpollicaris. *Pedunculus* infimus 1 $\frac{1}{2}$ poll. longus, gracilis, scaber. *Spica mascula* castanea, 8-12 lin. longa, 2 lin. lata, saepe obliqua, ima basi subinde fœminea: rcliquæ (nisi infima) apice masculæ: superiores abbreviatæ, sessiles, evaginatæ: inferiores 6-8 lin. longæ, 1 $\frac{1}{2}$ -3 lin. latæ. *Squamæ* conformes, medio costato-nervatae, punctis purpurcis conspicue notatae, vel immaculatae: masculæ longiorcs, subinde cuspidatae. *Perigynium* $2\frac{2}{6}$ lin. longum, $\frac{7}{6}$ lin. latum. *Achenium* $1\frac{3}{6}$ - $1\frac{4}{6}$ lin. longum, $\frac{6}{6}$ lin. latum, oblongo-triquetrum, fuscum, basi styli apiculatum.

I described this species in the Lin. Trans. under the name of *C. thecata* from immature specimens from Herb. *Preiss*, sent to me by Mr. Ward. Nees had previously named it after its discoverer, and it was published by Lehmann in his 'Plantæ Preissianæ' in 1846, the year in which my paper was read. Drummond's later specimens are more mature, and exhibit the purple spots on the squamæ and perigynia, as shown in Tab. CLXXXVI. They are more conspicuous at the base of the perigynia. The aspect and habit are those of *C. alvata*, B., but the affinity is rather with *C. extensa* and its allies.

174. *C. barbata* (Boott); spicis 4-5 ovalibus vel oblongis gracilibus fusco-purpureis erectis contiguis, terminali mascula sessili, reliquis fœmineis, superioribus sessilibus evaginatis, infima subremota inserte vel paulo exserte pedunculata; bractea infima culmum longe superante; stigmatibus 3; perigyniis ellipticis acute triquetris emarginato-bidentatis superne vel ore marginibusque scabris punctis resinosis ferrugineis notatis pallide castaneis leviter nervatis, squama ovata acuta mucronata vel obtusa mutica apice ciliata purpurea medio pallida carina scabra duplo longioribus. (TAB. CLXXXVII.)

HAB. In Tasmania. New Norfolk, *Gunn*, 1407 (Herb. *Hooker*).

Culmus subpedalis, gracilis, triqueter, lavis, basi foliatus, rudimentis foliorum vaginisque maculatis tectus; pars spicas gerens 1 $\frac{1}{2}$ - $2\frac{1}{2}$ poll. longa. *Folia* 1- $1\frac{1}{2}$ lin. lata, culmo breviora, plana, rigida. *Bracteæ* culmo longiores: infima vaginata, elongata, saepe altera sterilis longius vaginata, 2 $\frac{1}{2}$ -5 poll. remota. *Vagina* 3-6 lin. longa, maculata. *Spica mascula* 5-9 lin. longa, 1- $1\frac{1}{2}$ lin. lata. *Spicæ fœmineæ* 4-8 lin. longæ, 1 $\frac{1}{2}$ -2 lin. latæ. *Squamæ* omnes conformes: masculæ saepe muticæ. *Perigynium* $1\frac{4}{6}$ lin. longum, $\frac{1}{2}$ lin. latum. *Achenium* $\frac{8}{6}$ lin. longum, $\frac{1}{2}$ lin. latum, triquetro-ovale, pallidum.

A *C. Preissii* abunde differt, spicis minoribus, approximatis, inferioribus fœmineis, purpureis; perigyniis minoribus; squamis saepe muticis; bracteis culmo longioribus; culmo gracili. A *C. lacistema*, Br., spicis majoribus evaginatis; perigyniis crebre costato-nervosis, ore insigniter albo-hyalino, integro, aperto, saepe lacerato, gaudet.

The only specimens I have seen of this species are those in the herbarium of Sir W. J. Hooker. They are not fully mature. From the presence of the sterile bract below the spikes it is probable that the inflorescence may be found to extend to it. The nerves are generally less distinct than the figure exhibits them.

175. *C. lœta* (Boott); spicis 3–4 remotis oblongis pedunculatis, terminali mascula elliptica, reliquis fœmineis sublaxifloris longe exserte pedunculatis nutantibus, suprema masculam sœpe superante, infima basi attenuata subradicali; bracteis brachyphyllis; stigmatibus 3; perigyniis obovatis trigonis obtusis vel rostellatis, ore integro excurvo, oblique stipitatis pubescentibus superne ciliatis enerviis vel basi obsolete nervatis flavidis purpureo-tinctis, squama amplectente purpurea medio pallida scabra apice anguste albo-hyalina ciliata subacuta vel obtusissima mutica vel cuspidata angustioribus demum longioribus. (TAB. CLXXXVIII.)

$\beta.$ *major*; spicis paulo majoribus, squamis quandoque subemarginatis, masculis cuspidatis; perigyniis basi obsolete nervatis.

HAB. In Himalaya orientali temperata et alpina. Sikkim, alt. 12–14,000 ped., J. D. Hooker.

Culmus 6–12-poll., gracillimus, apice curvatus, triquetus, laevis. *Folia* $\frac{1}{2}$ –1 lin. lata, culmo multum breviora. *Bractæ* angustæ, vaginatæ: inferiores subfoliaceæ, omnes pedunculis multum breviores. *Vaginæ* 3–9 lin. longæ. *Pedunculi* 1–6 poll. longi, sciracei, superne scabri. *Spica mascula* 3–4 lin. longa, $\frac{3}{4}$ lin. lata, pedunculata: squamæ omnes, nisi infima, muticæ, obtusæ. *Spicæ fœmineæ* 5–8 lin. longæ, 1 lin. latæ. *Perigynium* $1\frac{6}{10}$ lin. longum, $\frac{6}{10}$ lin. latum, stipite curvato. *Achenium* $1\frac{1}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, triquetro-obovatum, stipitatum, basi styli crassiori obliquo terminatum.

A *C. pediformi*, Meycr, differt, culmo gracillimo; foliis angustis, brevibus; spicis minoribus remotis, longe pedunculatis; squamis sœpe obtusissimis; perigyniis minoribus, enerviis, ore integro aperto.

Var. $\beta.$ ad *C. cardiolepidem* spectans, quæ differt spicis subinserte pedunculatis; squamis masculis emarginatis cuspidatis.

I am not aware of any published description of the *C. pellucida*, Turcz., having only seen a specimen in Herb. Hooker, and an imperfect one sent to me by M. Fischer from Siberia. In both the margin of the scales is broadly hyaline, as in *C. pediformis*, to which I think it belongs.

176. *C. Barrattii* (Torrey); spicis 4–5 rarius 3–6 cylindricis pedunculatis subapproximatis, mascula sœpius 1 purpurea demum ferruginea elongata erecta vel 2, reliquis fœmineis apice masculis pendulis vel nutantibus rarius erectis purpureis vel ferrugineis viridi pictis simplicibus vel inæqualibus geminatis; bracteis evaginatis, superioribus breve cuspidatis, infima angustissima spicâ breviori, vel rarius foliacea plus minus vaginata; stigmatibus 3; perigyniis ovalibus vel ovali-lanceolatis obtuse triquetris sœpe oblique divergentibus erostratis obtusis vel abrupte vel sensim rostellatis, ore integro vel subemarginato, granulatis glabris leviter nervatis demum lutescentibus apice ferrugineis, squama ovata obtusa vel subacuta mutica fusco-purpurea vel ferruginea margine pallida nervo concolori longioribus.—*C. Barrattii*, Schw. et Tor. Mon. 361; Kunth, 518; Dewey, Sill. xi. 162; Beck, 443; Sartwell, Exs. n. 59. *C. flacca*, Carey, 519. (TAB. CLXXXIX.)

HAB. In America septentrionali. New Jersey, Knieskern. North Carolina and Alabama, Curtis.

Culmus 1–2 $\frac{1}{2}$ -ped., triquetus, strictus, firmus, laevis vel superne scabriusculus, basi foliatus vaginisque foliorum leviter reticulato-fissis tectus; pars spicas gerens 2–5 $\frac{1}{2}$ poll. longa.

Folia 1–2 lin. lata, culmo breviora, glauca, marginibus recurvis, stricta, firma, apice extremo scabra. *Bractæ* superiores squamæformes, ferrugineaæ, cuspidatae vel muticæ: infima sœpe sciracea, spicâ brevior, cuspidata; vel rarius foliacea, vaginata, subinde culmo longior. *Auriculæ* elongatae, ferrugineaæ. *Pedunculi* $\frac{1}{2}$ –1 $\frac{1}{2}$ poll. longi, filiformes, glabri: infimus in uno specimine subradicalis setaceus, 6 poll. longus. *Vagina* 2–6 lin. longa, intus ferruginea. *Spica mascula* 1–2 poll. longa, 2 lin. lata, acuta, sœpe spicula altera brevior, sessilis. *Squamæ* arcta imbricatae, obtusæ, margine pallidæ, nervo concolori infra apicem evanescente. *Spicæ fœmineæ* $\frac{1}{2}$ –2 $\frac{1}{2}$ poll. longæ, 2–3 lin. latæ, rarius erectæ, nutantes vel pendulæ, apice plerumque conspicue masculæ; vel simplices, vel una vel altera vel omnes geminate, rarius ternatae, quarum una abbreviata, sessilis, sœpe omnino fœmineæ. *Perigynium* $1\frac{4}{10}$ – $1\frac{7}{10}$ lin. longum, $\frac{7}{10}$ lin. latum, brevissime vel vix rostellatum, ore integro vel emarginato; (sub lente) granulatum, glabrum. *Achenium* 1 lin. longum, $\frac{7}{10}$ lin. latum, obovatum, triquetrum, castaneum, angulis pallidis, basi styli apiculatum.

C. flaccæ, Schreb., arcta affinis. Differt spica mascula sœpius unica, fœmineis sœpe geminatis; squamis muticis, nervo subconcolori; bracteis plerumque brevibus; perigyniis sœpe ovali-lanceolatis glabris; vaginis foliorum reticulato-fissis.

I find in this species—

5 with 3 spikes.	32 with 1 male.	1 with 1 female.
24 "	4	14 "
12 "	5	2
5 "	6	1
1 "	10	13 "
		2
		19 "
		3
		11 "
		4
		3 "
		5

In sixteen the upper or lower, or the two upper and lower spikes were geminate; and in one, the middle spike ternate. All, except the abbreviate spicula of the geminate spikes, conspicuously male at top. I have never seen any specimens from the United States, except those from the seacoast of New Jersey, but Mr. Curtis (Sill. Journ. vii. 410. 1849) notices *C. flaccæ*, Schreb., as a native of Raleigh, North Carolina, and of Alabama.

177. *C. elata* (Lowe); spicis 7 cylindricis elongatis, terminali mascula gracili basi attenuata subsessili ferruginea, reliquis fœmineis duplo latioribus pallidis, superioribus apice parce masculis approximatis, inferioribus remotis, omnibus laxifloris nutantibus inserte pedunculatis; bracteis foliaceis spicis suis longioribus; stigmatibus 3; perigyniis obovatis obtuse triquetris cylindrico-rostratis alte bifidis glabris laciniis scabris nervatis nervis quibusdam superne evanidis viridibus demum superne (sub lente) punctis ferrugineis maculatis, squama ovato-lanceolata acuminata acuta longe hispido-aristata ferruginea medio maculata nervo viridi longioribus (aristâ) brevioribus.—*C. elata*, Lowe, Trans. Camb. Phil. Soc. iv. 10 (1833); Kunth, 514. (TAB. CXC.)

HAB. In ins. Maderæ, convallibus umbrosis sylvaticis.

Culmus 4-ped., laevis, inferne foliatus; pars spicas gerens bipedalis. *Folia* 3–4 lin. lata, culmo breviora. *Bractæ* foliaceæ, culmo breviores: infima 3 lin. lata: superiores angustæ: omnes, nisi summa, vaginatæ. *Vaginæ* (præcipue intus) maculatae: infima 2 poll. longa. *Spica mascula* 3 poll. longa, 1 $\frac{1}{2}$ lin. lata. *Spicæ fœmineæ* 3–4 poll. longæ, 2–3 lin. latæ, laxifloræ, inferne flosculis alternatim dispositis: omnes, nisi summa sessilis, incluse pedunculatae, nutantes: superiores contiguæ, apice extremo masculæ: inferiores 4–8 poll. remotæ. *Squamæ* aristatae: masculæ ferrugineaæ; superiores emarginatae: fœmineæ pallidiores, acuminatae, acutæ, sœpe medio maculatae; inferiores longius aristatae, aristâ perigynia longe superante. *Perigynium* $2\frac{3}{10}$ – $1\frac{7}{10}$ lin. longum, $\frac{7}{10}$ – $\frac{8}{10}$ lin. latum, membranaceum, glabrum, cylindrico-rostratum. *Achenium*

perigynio conforme, $1\frac{7}{10}$ lin. longum, $\frac{7}{10}$ lin. latum, ellipticum, triquetrum, fuscum, angulis pallidioribus, punctulatum.

Affinis *C. Boryanae*, Schk. Differt spicis apice parce masculis, magis laxifloris, incluse pedunculatis; squamis foemincis acuminatis, acutis; perigyniis obovatis nec lanceolatis, achenio elliptico conformibus, nec subinflatis; bracteis brevioribus.

This species, like *C. Boryana*, has simple or compound spikes, and may on future investigation perhaps be found to be inseparable from that species. The specimen figured was sent to me from Madeira by Mr. Lowe, differing from his description, "spicis basi compositis ramosis," in having simple spikes. The same variation is observable in the allied *C. sylvatica* of Europe. I have never seen *C. Boryana* reduced from its typical form (Schk. fig. 191) to simple spikes, with any so long and lax as in *C. elata*. They are generally too erect.

178. *C. psychrophila* (Nees); spicis 4-3 rarius 5-6 oblongis contiguis purpureo-flavidis, terminali basi (rarius omnino) mascula sessili, reliquis foemincis, inferioribus pedunculatis demum cernuis bracteatis evaginatis, infima saepe subremota; stigmatibus 3; perigyniis ovalibus cylindrico-rostratis, ore obliquo bidentato, obtuse triquetris flavidis saepe rostro (*medio atro-purpureo*) margini serrato, tuberculato-asperulis, 5-7-nervatis, squama ovata acuminata acuta vel hispido-cuspidata atro-purpurea nervo pallidiori longioribus.—*C. psychrophila*, Nees, *Wight, Contr. p. 127*; *Kunth*, 463. *C. asperula*, Nees, *l. c. 124 (non Turcz.)*; *Kunth*, 433. (TAB. CXCI.)

HAB. In Himalaya temperata tota, alt. 6-12,000 ped. Kadarkanta, *Royle*, n. 113. Choor, *Royle*, n. 111, 112. Kishingunga Valley, *Strachey et Winterbottom*. Sikkim, *J. D. Hooker*. Marri, *Fleming*.

Cæspitosa. *Culmus* 1-2-ped., gracilis, acute triquierter, scaber, basi foliatus, rudimentisque foliorum purpurcis, albo-nervatis, reticulato-fissis, vaginisque longis membranaceis (sub lente) ferrugineo-maculatis, tectus; pars spicas gerens 1½-3 poll. longa. *Folia* 1-2 lin. lata, culmo longiora vel aequantia, fusco-viridia. *Bractea* infima angusta, spica sua longior vel culmum aequans: una, saepe sterilis, nunc infra spicas subpollicem remota: omnes evaginatae. *Auriculae* purpuræ. *Pedunculus* infimus 5-12 lin. longus, setaceus, scaber. *Spicæ* 8-12 lin. longæ, 3-4 lin. latæ: suprema plerumque basi mascula: infima saepe basi attenuata, nunc 1-1½ poll. remota, cernua; in uno specimine subradicalis, longe pedunculata. *Squamæ* masculæ lancolatae, colore dilutiores: omnes acutæ vel cuspidatae. *Perigynium* $1\frac{8}{10}$ lin. longum, $\frac{6}{10}$ lin. latum. *Achenium* $\frac{8}{10}$ lin. longum, $\frac{5}{10}$ lin. latum, obovato-triquetrum, inæqualiter obtuse triquetrum, basi facibus concaviusculis, pallidum, basi styli obliqua abrupte apiculatum.

I find in 110 specimens of this species—

34 with 3 spikes.	24 with terminal spike male.
66 „ 4	86 with terminal spike male at base.
8 „ 5	
2 „ 6	
110	110

In 106 the lower spikes were female.

In one the upper female was male at base, and in three the two upper ones.

In three the lower spike was compound at base.

In one the lowest spike was subradical.

Nees founded this species on Royle's specimens, n. 113, of which I have seen ten, and in only one of which the terminal spike was male. His *C. asperula* was founded on Royle n. 111, all of which that I have seen were young, but unquestionably the same species. I should have adopted this last name had it not

been given by Turczaninoff to another species. The affinity to *C. frigida*, alluded to by Nees under *C. psychrophila*, is the true one.

179. *C. obscura* (Nees); spicis 3-8 oblongis vel cylindraceis atro-purpureis concoloribus contiguis densifloris erctis, terminali basi rarius omnino mascula scissili, reliquis foemineis evaginatis, superioribus arcte congestis, inferioribus plus minus longe pedunculatis bracteatis, infima saepe subremota; stigmatibus 3; perigyniis ovalibus trigonis rostellatis, orci emarginato, superne subinde scabris marginibus dentatis nervatis, flavidis apice purpureis granulatis squama ovata obtusa vel apiculata rarius mucronata æquilitata concolori longioribus vel aequantibus.—*C. obscura*, Nees, *Wight, Contr. 126*; *Kunth*, 515. (TAB. CXCII.)

HAB. In Himalaya temperata. Kumaon, *Royle*, n. 112, 118!, alt. 10-11,000 ped. Ralum River, 10,500 ped., *Strachey et Winterbottom*! Kunawur, *Jacquemont*, n. 476! Sikkim, alt. 10-12,000 ped., *J. D. Hooker*.

Culmus 1-3-ped., triquierter, scaber, validus, stricte erectus, basi foliatus; pars spicas gerens 1-3 poll. longa. *Folia* 1½-2 lin. lata, culmo breviora vel longiora. *Bractæ* evaginatae: infima saepe subfoliaeea, culmo longior vel subæquans: altera (sterilis) saepe infra spicas 1½-2 poll. remota, culmo longior. *Auriculae* rotundatae, atro-purpureæ. *Pedunculus* infimus 3-12 lin. longus, scaber. *Spicæ* 6-15 lin. longæ, 2 lin. latæ, concolores, omnes congestæ: vel infima 1-2 poll. remota, in uno specimine basi composita. *Squamæ* conformati, apice (sub lente) ciliolatae. *Perigynium* $1\frac{1}{10}-\frac{4}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, superne subinde scabrum, marginibus dentatis, apice tenuiter granulatum, leviter nervatum, nervis interdum inconspicui; orci emarginato, demum truncato. *Achenium* $\frac{8}{10}-1$ lin. longum, $\frac{1}{2}$ lin. latum, triquetro-ovale, fuscum, punctulatum.

The affinity of this species is with *C. alpina*, Vahl, and not, as Nees supposed, with *C. alopecuroides*, Don, and *C. punctata*, Nees (*C. notha*, Kunth). It is very closely allied to *C. infuscata*, Nees, itself perhaps inseparable from *C. alpina*, differing from it in its more numerous cylindrical spikes, rostellate perigynium, elongated, stout, rigidly erect culm, and broader leaves. Nees quotes Royle, n. 118 under his *C. infuscata*, but my specimen under that number belongs to *C. obscura*.

180. *C. ustulata* (Wahl., var. γ , Ledebour); spicis 4-6 cinnamomeis vel fusco-brunneis, terminali mascula vel basi vel apice et basi mascula, reliquis foemineis ovalibus pedunculatis nutantibus, inferioribus vaginatis, infima subinde basi composita subremota; bracteis brachyphyllis; stigmatibus 3; perigyniis late ovalibus obtusis abrupte rostellatis, vel ellipticis sensim rostellatis, ore albido emarginato bidentato, superne marginibus hispidulis, cinnamomeis vel brunneis, inferne pallidis tenuissimis compressis, squama oblongo-ovata vel elliptica vel lanceolata acuminata acuta vel obtusa bis-triplo latioribus longioribusque.—*C. ustulata*, Wahl., γ , *Ledebour, Fl. Altaica*, 232. *C. coriophora*, Fisher; *Kunth*, 463. (TAB. CXCIII. Fig. 1, 2.)

HAB. In Dauria, mont. Altaicis, etc.

Radix fibrosa; fibris flavidis. *Culmus* 12-21-poll., validus, obtusangulus, laevis, superne nudus; pars spicas gerens 2-3 poll. longa. *Folia* 1-2 lin. lata, 3-4 poll. longa. *Bractæ* inferiores vaginatae, breves, $\frac{1}{2}-1$ poll. longæ: suprema squamæformis: rarius altera sterilis longior e spicis 3 poll. remota.

Spica terminalis 6 lin. longa, 3 lin. lata: fœmineæ 5–9 lin. longæ, 3–4 lin. latæ. *Squamæ* masculæ latiores, obtusæ: fœmineæ latitudine variabiles. *Perigynium* late ovale, obtusum, abrupte rostellatum, $2\frac{1}{2}$ lin. longum, $1\frac{7}{10}$ lin. latum, squamâ sœpe triplo latius: vel ellipticum, sensim rostellatum, 1 lin. latum; ore albidio, emarginato, bidentato. *Achenium* (cum stipite $\frac{2}{10}$ lin. longo) 1 lin. longum, $\frac{3}{10}$ lin. latum, triquetro-ellipticum, pallidum.

Var. *minor*, spicis 2–3 rarius 1 nutantibus ovalibus omnino fœmineis vel superioribus apice vel medio masculis. (TAB. CXCIV. Fig. 1.)

HAB. In Himalaya orientali alpina ad Sikkim, alt. 14–17,000 ped., J. D. Hooker. In Tibetia occidentali alpina, alt. 17,000 ped., Strachey et Winterbottom, ad Nubra, Dr. Thomson, 15–17,000 ped.

In Tab. CXCIII. I have figured (n. 1) a specimen from Dahuria sent to me by M. Fischer as his "*C. coriophora*"; (n. 2) a specimen from the Altai from Ledebour, as his "*C. ustulata* γ"; and (n. 3) a specimen from Dovrefield, Norway, "*C. ustulata*." In examining the specimens I have of *C. ustulata* from Europe, North America, and the Himalayas, I can detect no characters by which *C. coriophora* can be distinguished. In Europe, *C. ustulata* has one or two male spikes, though I have specimens from Hoppe in which the terminal spike is male at the base or apex; and in North American specimens it is male at the apex or in the middle. The cinnamon-colour of the typical *C. coriophora* is observable more or less in specimens I have of *C. ustulata* from Lapland, from Wahlenberg, in one of which the lower spicula is compound, and the scales lanceolate, and longer than the perigynium. The scales vary in breadth, broader at the base of the spiculae, becoming narrower, very acuminate, and at times mucronate at the top.

The var. *minor* from the high mountains of India passes from the single spike to the usual number of spicula found in *C. ustulata*, but it is remarkable for the occasional absence of male florets, and the orifice of the perigynium is more acute than usual. There is however an insensible transition from it to the usual habit of *C. ustulata* in the specimens brought by Dr. Hooker from the Himalaya. Anderson (Cyp. Scand. p. 39), in his description of *C. alpina*, alludes to a similar dwarfed state of that species: "Quo altius in loca alpina adscendit, eo magis contrahuntur partes omnes; ut demum in cacumina summa alpium fere bipollucaris emergit culmus: spicæ 2–3 quasi in unam (immo sola sœpe evadit) collectæ." The details given in Tab. CXCIII. are of n. 1, and of n. 3, the last on the right-hand of the plate.

C. ustulata, Wahl., has a very wide range, extending in Europe from the mountains of Scotland to those of Norway, Lapland, and Iceland. In Asia from the Altai to the Himalayas, Nipal (Wallich, n. 3389 a), Sikkim (J. D. Hooker), Tibet (Strachey and Winterbottom), Nubra (Dr. Thomson); and in North America, from Labrador (Torrey), Igloolik (Sir Ed. Parry), Minto Inlet (Anderson), to the Arctic seacoast (Sir John Richardson).

The Asiatic and Indian specimens vary from the European ones in the variable distribution of the male florets.

Specimens from Norway, Finmark, and Lapland:—

3 with 3 spikes.	12 with 1 male spike.
8 „ 4	3 „ 2
4 „ 5	

In 2 the lower female spike was compound.

Specimens from India:—

5 with 3 spikes.	4 with 1 male spike.
3 „ 4	1 „ 2
2 „ 5	4 with terminal spike male in the middle.

1 with terminal spike male at apex.

In one the second spike was male at the base, and in one male at the apex.

Specimens from North America:—

1 with 3 spikes.	1 male.
3 „ 4	3 with terminal spike male towards the base.

Var. *coriophora*, Dahuria and Altai:—

3 with 4 spikes.	3 with 1 male.
3 „ 5	2 with terminal spike male at base.
2 „ 6	2 with terminal spike male at base and apex.

1 (of six spikes) all female.

In one the second spike was male at apex (the terminal one being male at base and apex).

Var. *minor*, India:—

8 with 1 spike.	27 all female.
15 „ 2	8 with terminal spike male at apex.
15 „ 3	3 with the two upper spikes male at the apex.

181. *C. alpina* (Vahl), var. *erostrata*, Boott; spicis 3–5 oblongis obtusis sessilibus congestis densifloris atropurpureis flavidisque, terminali basi mascula, reliquis fœmineis, infima brevissime bracteata; stigmatibus 3; perigyniis ovalibus vel oblongo-ovatis erostribus flavidis, ore purpureo integro vel leviter emarginato, glabris plus minus nervatis superne tenuiter granulatis, squama ovata obtusissima vel acutiuscula æquata atro-purpurea concolori longioribus. (TAB. CXCIV. Fig. 2.)

HAB. In Himalaya alpina, ad Kumaon, Royle, n. 61, et ad Gugi, alt. 14,500–15,500 ped., Strachey et Winterbottom.

Culmus 4–9-poll., acute triquetus, scaber, graeillimus, curvatus, basi rudimentis foliorum purpureis albo-nervatis tectus; pars spicas gerens 6–7 lin. longa. *Folia* 1–1 $\frac{1}{4}$ lin. lata, culmo breviora, plana; demum marcida, flava. *Bractea* squamæformis, subulato-apiculata, spiculâ brevior: vel mutica: altera *sterilis* foliaæca, culmum subæquans, sœpe e spicis subpollicem remota, brevissime vaginans. *Auricula* purpurea. *Squamæ* omnes coniformes. *Spicæ* 4–5 lin. longæ, $2\frac{1}{2}$ lin. latæ, subæquales vel mediæ minores. *Perigynium* 1–1 $\frac{2}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, erostre, obtusum, glabrum, superne solum (sub lente) granulatum, leviter nervatum, flavidum, nervis concoloribus, sœpe inconspicuus. *Achenium* $\frac{7}{10}$ lin. longum, $\frac{4}{10}$ lin. latum, ovale, triquetrum, pallidum, basi styli persistente apiculatum.

A formâ typicâ *C. alpina* differt, eulmo debiliore, curvato, scabriori; bracteis abbreviatis, infima *sterili* solum foliaæca; spicis majoribus, oblongis, sœpe pluribus; perigyniis erostribus, ore subintegro, solum apice leviter granulatis.

Anderson (Cyp. Scand. p. 39), in his description of *C. alpina*, speaks of it as "mirum in modum varians planta." I have examined specimens from all countries, but have found none which entirely agree with Dr. Royle's. The habit however is that of *C. infuscata*, Nees, which I think cannot be separated from *C. alpina*, though it has cuspidate squamæ. The only form which has an erostrate perigynium is the *C. holostoma*, Drejer; but this variety or species has the rigidly erect culm of *C. alpina*, and its most striking character is the "color perigynii viridescenti-glaucus," for the terminal spike is certainly occasionally androgynous, male at base.

The specimens of Strachey and Winterbottom are young, and some only two inches high.

182. *C. Banksii* (Boott); spicis 3–7 fusco-purpureis rarius ferrugineis oblongo-ovalibus vel cylindraceis pendunculatis, terminali mascula vel basi mascula, reliquis fœmineis crassis, superioribus contiguis, inferioribus exserte pedunculatis plerumque nutantibus, infima remota; bracteis vaginatis culmo longioribus; stigmatibus 3; perigyniis ovatis vel ovalibus rostratis, rostro tenui purpureo, ore obliquo bidentato, hyalino-tenuissimis albidis

tenuiter nervatis glabris, squama lanceolata vel spathulata emarginata vel subtruncata vel acuta cuspidata fusco-purpurea nervo pallido latioribus brevioribusque.—C. Banksii, *Boott, Lin. Trans.* xx. 119; *Hooker, Fl. Antarct.* ii. 365. t. 142. C. germana, *Boott, Fl. Antarct.* ii. 336. (TAB. CXCV.)

HAB. In America meridionali. Tierra del Fuego, *Banks et Solander*. “*C. atrata* et *C. magellanica*” (Herb. Banks). *Darwin*, n. 299, 300, 301 (Herb. *Henslow et Hooker*). Port Famine, *Anderson*. Orange Harbour, *Capt. Wilkes*. Cape Tres Montes, *Darwin*, n. 302.

Stolonifera. *Culmus* 6–18-poll., triqueter, lavis, apice inter spicas scaber, basi foliatus; pars spicas gerens 4–10 poll. longa. *Folia* 2–4 lin. lata, culmo breviora vel longiora, rigida, carinata, basi nervis earina marginibusque tuberculato-asperima. *Bracteæ* inferiores late foliaceæ: superiores angustæ: omnes vaginatæ, saepe culmo longiores. *Vaginæ* intus purpureæ: infima $1\frac{1}{2}$ – $2\frac{1}{2}$ poll. longa. *Ligula* elongata, pallida. *Pedunculus* infimus 1–5 poll. longus, lavis. *Spica terminalis* mascula 8–12 lin. longa, 2 lin. lata, rarissime spicula altera minori ad basin ejus sita: vel androgyna, basi mascula, 1– $1\frac{1}{2}$ poll. longa, 4–6 lin. lata. *Spicæ fæmineæ* $\frac{1}{2}$ – $1\frac{1}{2}$ poll. longæ, 4–6 lin. latae, densifloræ: omnes pedunculatæ: infima 1–5 poll. remota, basi attenuata. *Squamæ* omnes conformes. *Perigynium* $2\frac{6}{10}$ – $4\frac{2}{10}$ lin. longum, $1\frac{2}{10}$ – $1\frac{9}{10}$ lin. latum. *Achenium* minimum, longe stipitatum (stipite $\frac{1}{2}$ lin. longo), 8 lin. longum, $\frac{4}{10}$ – $\frac{5}{10}$ lin. latum, triquetrum, castaneum. *Stylus* stigmataque longa.

Affinis *C. Mertensii*, *Prescott*, quæ spicis pluribus angustioribus longioribus abunde differt.

Since the publication of the ‘Flora Antarctica’ of Dr. Hooker, I have seen a large suite of specimens (eighteen) collected in Orange Harbour, Fuegia, by Captain Wilkes, one half of which (nine) had the terminal spike male, agreeing thus with the plant from Cape Tres Montes, collected by Mr. Darwin. It is singular that all the specimens found by Sir Joseph Banks and Mr. Solander have the terminal spike male at base. Of twenty-five specimens I find—

6 with 3 spikes.	13 with terminal spike male.
11 „ 4	12 with terminal spike male at base.
5 „ 5	In one there was a small male spike at
2 „ 6	the base of the terminal one.
1 „ 7	

I find the size of the perigynium to vary in the same specimen. The colour of the spikes is generally of a dull purple, but occasionally of a ferruginous colour. The perigynium in the dried state is compressed, but naturally is probably inflated.

183. *C. hæmatostoma* (Nees); spicis 4–10 cylindricis purpureis demum ferrugineis, superioribus 1–6 masculis vel apice rarius basi masculis arcte contiguis sessilibus, reliquis (rarius omnibus) 3–6 fœmineis, superioribus saepe apice masculis subremotis exserte pedunculatis, vel singulis, vel mediis, vel inferioribus (subinde omnibus) geminatis, vel infima basi attenuata, saepe composita; bracteis vaginatis culnum subæquantibus; stigmatibus 3, stylo pubescenti; perigyniis elliptico-lanceolatis compresso-triquetris, ore obliquo bidentato, nervatis strigoso-hirtis marginibus serratis purpureis basi pallidis, squama ovata acuta vel hispido-cuspidata purpurea nigra albo-hyalina carina albida medio scabriuscula angustioribus longioribusque.—*C. hæmatostoma*, *Nees*, *Wight, Contr.* 125; *Kunth*, 514. (TAB. CXCVI.)

HAB. In Himalaya temperata et alpina, ad Kunawur, *Royle*, n. 116; *Jacquemont*, n. 481, etc. Kumaon, *Strachey et Winterbottom*. Sikkim, alt. 10–17,000 ped., *J. D. Hooker*.

Cæspitosa. *Culmus* 1–3-ped., teres, lavis, basi foliatus; pars spicas gerens 3–9-pollicaris. *Folia* $\frac{1}{2}$ – $1\frac{1}{2}$ lin. lata, culmo breviora. *Bracteæ* vaginatæ, culmo breviores vel longiores. *Vagina* infima $\frac{1}{2}$ – $1\frac{1}{2}$ poll. longa. *Pedunculi* scabri. *Spiculæ* 2–14. *Spicæ* 6–15 lin. longæ, 1–3 lin. latæ: superiores masculæ, vel apice masculæ, vel rarius spica terminalis basi mascula: fœmineæ superiores saepe apice masculæ: omnes singulæ vel geminatæ vel inferiores vel infima (*sæpe singula*) basi spieulis 1–4 sessilibus minoribus composita. *Squamæ* omnes conformes. *Perigynium* 2–3 lin. longum, $\frac{4}{10}$ – $\frac{7}{10}$ lin. latum. *Achenium* (cum stipite $\frac{4}{10}$ lin. longo) $1\frac{4}{10}$ lin. longum, $\frac{1}{2}$ lin. latum, compresso-triquetrum, pallidum. *Stylus* pubescens.

This species, which Nees founded on a specimen of Dr. Royle’s, with six female spikes, and which he considered approached *C. atrata*, belongs to the *Ferrugineæ*. In its simpler forms it has commonly a terminal male spike, and three or four female ones; but in the more developed forms the number of male spikes is increased, and the female ones are geminate or compound. The position of the male florets is often capricious. It is allied to *C. obtusa*, but differs from it in its cuspidate squamæ and compound inflorescence.

184. *C. eburnea* (Boott); spicis 3–5 albidis parvis paucifloris erectis approximatis, terminali mascula ovali sessili, reliquis fœmineis ovatis exserte pedunculatis, superioribus vel omnibus masculam superantibus, infima subremota; vaginis aphyllis; stigmatibus 3; perigyniis triquetro-ovalibus demum obovatis rostratis, ore hyalino obliquo nitidis leviter nervatis pallidis demum fusco-olivaceis, squama hyalina obtusa angustioribus longioribusque.—*C. eburnea*, *Boott, Fl. Bor. Am.* 226. t. 225; *Carey*, 524; *Sartwell, Exs.* n. 101. *C. alba*, *Dewey*, *Sill.* vii. 266; *Schw. et Tor.* 341; *Beck*, 439. *C. alba*, var. *setifolia*, *Dewey*, xi. 316. *C. paupercula*, *Tor. Mon.* 415 (*non Michaux*). (TAB. CXCVII.)

HAB. In America septentrionali. Arctic America and Rocky Mountains to Kentucky.

Cæspitosa. *Radix* repens. *Culmi* plures ex eadem cæspite, setacci, obtusanguli, laves, 4–15-pollicares; pars spicas gerens $\frac{1}{2}$ – $2\frac{1}{2}$ poll. longa. *Folia* setacea, involuta, culmo breviora. *Vaginæ* spicigeræ aphyllæ, pallide castaneæ, apice albo-hyalinæ, muticæ: rarius infima brevissime cuspidata. *Pedunculi* 2–14 lin. longi, laves, stricte erecti. *Spica mascula* 2–3 lin. longa, $\frac{1}{2}$ lin. lata, inserte vel breve exserte pedunculata. *Spicæ fæmineæ* 3–6-floræ, superioris vel omnes masculam superantes, infima subinde 1– $1\frac{1}{2}$ poll. remota: 2–3 lin. longæ, 1 lin. latæ. *Squamæ* masculæ arcte imbricatae, oblongæ, obtusæ, albæ, concoloris: fœmineæ ovatæ, obtusæ, hyalinæ, nervo pallide castanæ. *Perigynium* $\frac{8}{10}$ –1 lin. longum, $\frac{4}{10}$ lin. latum. *Achenium* perigynio conforme, fuscum, basi stylis incrassata apiculatum.

Habitus omnino *C. albæ*, *Seop.*, sed gracilior et omnibus partibus minor.

This elegant species extends from the Mackenzie River and the Rocky Mountains to Kentucky.

185. *C. Lemanniana* (Boott); spica ferrugineo-purpurea, e spiculis pluribus androgynis apice acutato-masculis inæqualibus cylindricis composita, superioribus sessilibus simplicibus congestis, reliquis in spicas par-

tiales 5–7 subremotas deorsum magis compositas pedunculatas evaginatas, inferiores longe foliaceo-bracteatas insidentibus; stigmatibus 2; perigyniis ovalibus rostellatis, ore subbifurcato, marginibusque superne aculeatoserratis, leviter nervatis pallidis, squama lanceolata acuminata acuta rarius hispido-mucronata ferruginea glabra nervo pallido subdupo brevioribus.—C. Lemanniana, B., Lin. Trans. xx. 121. (TAB. CXCVIII.)

HAB. In America meridionali. In locis humidis montis Cotopaxi, Columbia, Hartweg, n. 1446; Herb. Lemann! Jameson, n. 220, Columbia!

Culmus bipedalis, validus, acute triqueter, scaber; pars spicas gerens 5–7 poll. longa. *Folia* plana, 3–5 lin. lata, culmo longiora, ad carinam marginesque scabra. *Bracteæ* inferiores 3–4 lin. latæ, culmo longiores, sursum decrescentes; infima subpedalis. *Spica* 6–7 poll. longa, 2–5 poll. lata. *Spicæ* partiales plures, e spiculis 2–7 cylindricis sessilibus pedunculatisque compositæ: inferiores longe pedunculatae bracteatae: infima rarius simplex. *Spiculae* 20–35: superiores simplices, congestæ, $\frac{1}{2}$ – $1\frac{1}{2}$ poll. longæ, 1–4 lin. latæ, omnes apice masculæ. *Pedunculi* scabri. *Squamæ* conformes: inferiores saepe mucronatae. *Antheræ* longæ, apiculatae, ferrugineo-maculatae. *Perigynium* (immaturum) $1\frac{1}{2}$ lin. longum, $\frac{5}{10}$ – $\frac{6}{10}$ lin. latum, bifidum vel subbifurcatum, dentibus serratis superne ad margines aculeatum. *Achenium* $\frac{8}{10}$ lin. longum, $\frac{4}{10}$ lin. latum, ellipticum, fuscum, basi styli crassiori apiculatum.

A *C. Pichinchensis* differt, spica ampliori; bracteis longioribus; perigyniis subbifurcatis dentibus marginisque scabris; achenio elliptico, basi styli incrassata.

We are but imperfectly acquainted with the *Carices* of the Andes of South America. This species may prove to be inseparable from *C. Pichinchensis*. The principal distinction is the distinctly subbifurcate orifice of the perigynium, the size of which, notwithstanding the more luxuriant growth, is more than that of the var. β than the typical form; the rostrum too is shorter.

186. *C. Pichinchensis* (Kunth); spica fuligineo-purpurea oblonga, e spiculis pluribus androgynis apice masculis inæqualibus ovatis cylindricisque composita; superioribus sessilibus simplicibus congestis, reliquis in spicas partiales subquaternas deorsum magis compositas pedunculatas, inferiores breve bracteatas evaginatas insidentibus; stigmatibus 2; perigyniis (*immaturis*) ellipticis stipitatis cylindrico-rostratis, ore emarginato bidentato ciliato, enerviis vel leviter nervatis glabris ferrugineis basi pallidis, squama lanceolata acuminata acuta involuta mutica vel cuspidata glabra concolori vel nervo pallido subdupo brevioribus.—C. Pichinchensis, Kunth, Nov. Gen. Pl. Amer. i. 223; Cyp. p. 392! (TAB. CXCIX.)

HAB. In America meridionali. In regno Quitensi, Rucu Pichincha, Humboldt et Bonpland! In montibus Quito, Jameson, Herb. Hooker, 143!—VAR. β . Columbia, in monte Pillyllum, 13,000 ped., Jameson, Herb. Hooker! Peru, in montibus, C. Gay, Herb. Mus. Paris! C. dura, Boott, Lin. Trans. xx. p. 121.

Culmus $1\frac{1}{2}$ -ped., acute triqueter, scaber; pars spicas gerens 3 poll. longa. *Folia* plana, $1\frac{1}{2}$ –3 lin. lata, culmum æquantia. *Bracteæ* infima $1\frac{1}{2}$ lin. lata, rarius spicam æquans. *Ligula* ampla, amplectens, ferruginea. *Spica* e spiculis 20–37, supremis 6–12 simplicibus composita. *Spicæ* partiales 3–4 pedunculatae, deorsum (e spiculis 5–12) magis compositæ. *Spiculae*

3–10 lin. longæ, 1–4 lin. latæ. *Pedunculi* scabri: inferiores vix pollicares. *Squamæ* omnes conformes. *Perigynium* (*in specimine Bonpland*) $1\frac{9}{10}$ –2 lin. longum, $\frac{7}{10}$ lin. latum, ellipticum, sensim cylindrico-rostratum; ore emarginato, ciliato; glabrum, leviter nervatum, fusco-purpureum.

Var. β ; spica minus composita, ferrugineo-purpurea; perigyniis minoribus, obovatis vel ovalibus, glabris vel ad margines superne parce dentatis; squama ovata, apice ciliata, nervo pallido scabro brevioribus.—C. dura, Boott, l. c. (TAB. CC. Fig. 1.)

Culmus gracilis, scaber, serraturis deorsum spectantibus. *Folia* rigida, angustiora, marginibus recurvis. *Perigynium* $1\frac{4}{5}$ lin. longum, $\frac{7}{10}$ lin. latum, abrupte rostellatum, ore sub-integro vel emarginato obliquo superne parce dentatum, vel (*in specimine Peruviano*, Gay) glabrum.

Since the description of *C. Pichinchensis*, in vol. xx. of the Linnean Transactions, from specimens gathered by Mr. Jameson on the mountains of Quito, I have obtained, through the kindness of Mr. Tuckerman, a figure of the original specimen in the Berlin Herbarium described by Kunth (which I have engraved in TAB. CXCIX.), and subsequently, through the kindness of M. Spach, have seen a specimen of Bonpland in the Herb. Mus. Paris, and also one from the Andes of Peru, gathered by M. Gay. The result from an examination of these specimens, has been to induce me to refer *C. dura* to a var. of *C. Pichinchensis*, and to doubt the specific difference of *C. Lemanniana*.

Future observation must determine the character of *C. Pichinchensis*, and the variations to which it is liable. Like many other species it was unfortunately described (to use Kunth's words) from a "specimen valde juvenile." Any one familiar with the variable forms of *Carex* from youth to age, and from differences of soil or elevation, will understand the difficulty of arriving at a positive opinion drawn from a few specimens. I have no doubt of the correctness of my referring Jameson's plant to that of Kunth, and should have considered *C. dura* to be distinct, but for the specimen of M. Gay, which in some respects unites the two. The perigynium in Gay's plant is the same in size and form as in *C. dura*, but is entirely smooth, as in the typical *C. Pichinchensis*. The scales are lanceolate and acuminate, and smooth as in *C. Pichinchensis*, while in *C. dura* they are rather ovate, and without the acuminate apex, and the central nerve is scabrous. The achene in Gay's plant is indented at the central margins, an abnormal defect, not observable in any of the other specimens.

TAB. CXCIX. is a figure of the original specimen in the Berlin Herbarium, described by Kunth, the lower details, taken from Bonpland's specimen in Herb. Mus. Paris; and TAB. CC. fig. 1. is Jameson's specimen from Columbia, which I originally described as *C. dura*. The perigynium *a*! and achene *f*! are from M. Gay's specimen.

187. *C. miliaris* (Michaux); spicis 2–3, terminali mascula cylindrica, fœmineis 1–2 parvis ovatis obtusis approximatis sessilibus purpureis; bracteis culmo brevioribus; stigmatibus 2; perigyniis late ovalibus biconvexis ventricosis abrupte cylindrico-rostratis lucidis purpureis basi pallidis, ore emarginato albo-membranaceo, enerviis, squama late ovata obtusa purpurea longioribus.—*C. miliaris*, Michaux, ii. 174, "erecta, gracilis; foliis planis, angustissimis; culmis superne asperis; spica fœminea sessili, ovoidea, fusca (interdum 2 distantes inferiori etiam sessili); bractea setacea, brevi, mascula pallida longius pedicellata; capsulis sphæroidcis, laevibus," Mich. l. c. (TAB. CC. Fig. 2.)

HAB. In paludosis borealibus Canadæ, præsertim ad lacus Mistassins dictos.

Culmus subbipedalis, basi foliatus; pars spicas gerens sub

2 poll. longa. *Folia* eulmo breviora. *Spicae mascula* 5–10 lin. longa, 1–1½ lin. lata, pallida. *Spicae foemineæ* 4–5 lin. longæ, 3 lin. latæ. *Squamæ masculæ* lanceolatæ. *Perigynium* 1– $\frac{8}{10}$ lin. longum, $\frac{6}{10}$ lin. latum. *Achenium* $\frac{8}{10}$ lin. longum, $\frac{6}{10}$ lin. latum ovali-orbicularum, basi styli persistente, lenticulare.

This species is the only one, of those described by Michaux, which has not been satisfactorily ascertained by recent observers. My friend, the late Charles Lemann, Esq., kindly interested M. Heldreich, then resident in Paris, about it, and he had the two specimens, here figured, drawn by Thiolat, from the herbarium of Michaux. M. H. says in a note: "Il y a trois échantillons du

C. miliaris dans l'herbier d'Achille Richard, et les étiquettes de l'écriture de Richard père disent: 'Spica mascula, squamis angustæ linearibus, urceoli turgidi ovati lèves glabri, rostello mutico, stigmatibus 2.' La tige est trigone, à angles non très aiguës. J'ai observé un caractère curieux, que les urceoli sont couverts en partie, surtout vers le haut, de glandes ou poils glanduleux, qui le plus souvent disparaissent sur le fruit mûr, et se détachent par le frottement."

I have not had an opportunity of examining the specimens, and the plant must be left to the judgment of those who may hereafter find it in Canada, but I suspect that it will be found inseparable from *C. saxatilis*, L. (*C. pulla*, Good.).

CORRECTION. (*Vide p. 13.*)

C. Chinensis (Retz); spica elongata e spiculis 5–6 cylindricis pallidis pedunculatis erectis remotis composita, terminali mascula, reliquis foemineis, ima basi parce masculis comosis exserte pedunculatis; bracteis (nisi infima) spicis suis plerumque brevioribus vaginatis, vaginis inflatis glabris; stigmatibus 3; perigyniis ellipticis basi productis sensim longiuscula rostratis, ore albo membranaceo obliquo bidentato, triquetris angulis medio magis prominentibus crebre nervosis pubescentibus flavide viridibus divergentibus, squama linearis-lanceolata acuminate acuta rarius truncata longe hispido-cuspidata alba nervo viridi latioribus longioribus (*cuspide*) saepc duplo brevioribus. (TAB. XXXVI.)

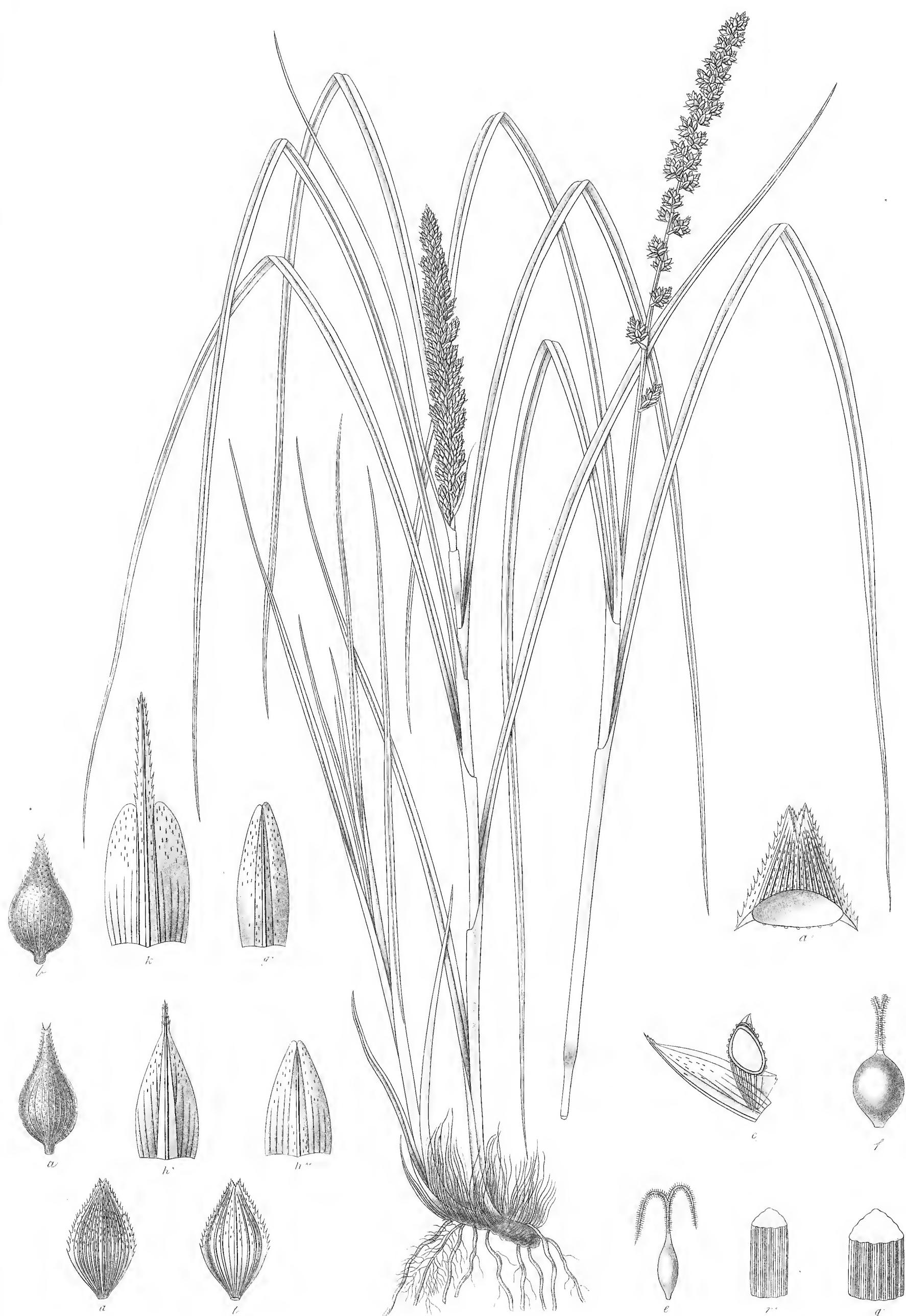
HAB. Hongkong, China, *Wright, American North Pacific Expedition under Captains Ringgold and Rogers, 1853–1856.*

Culmus subpedalis, triqueter, seaber, basi foliis brevibus

angustis munitus; pars spicas gerens 6–10 poll. longa. *Folia sterilia* 1–3 lin. lata, eulmo longiora, rigida, carinata, marginibus revolutis, supra vesiculis minimis albis sparsis asperata. *Bracteæ* omnes vaginatae, angustæ: infima quandoque elongata; vaginæ inflatae, glabrae, 6–8 lin. longæ. *Pedunculi* ½–2 poll. longi, omnes exserti, seaber. *Spica mascula* 1–1½ poll. longa, 1–2½ lin. lata: aliæ a se 1½–3 poll. remotæ, omnes basi paree masculæ. *Squamæ* omnes coniformes: maseulæ longiores. *Perigynium* 1– $\frac{5}{10}$ –1– $\frac{8}{10}$ lin. longum, $\frac{5}{10}$ – $\frac{6}{10}$ lin. latum. *Achenium* conforme, pallidum, demum nigrum, 1 lin. longum, $\frac{6}{10}$ lin. latum, aeute triquetrum, angulis medio prominentibus, faciebus ibi linea elevata transversis, supra lineam et infra concaviusculis, basi styli persistente apiculatum: basis *decidua* inerassata. *Racheola* linearis, brevissima, 1 lin. longa.

I am indebted to Dr. Asa Gray, of Cambridge, U. S. A., for a specimen of this plant, gathered by Wright at Hongkong, which has enabled me to correct my account of it. I had overlooked the male florets at the base of the female spikes, a character peculiar to several New Zealand species.

THE END.

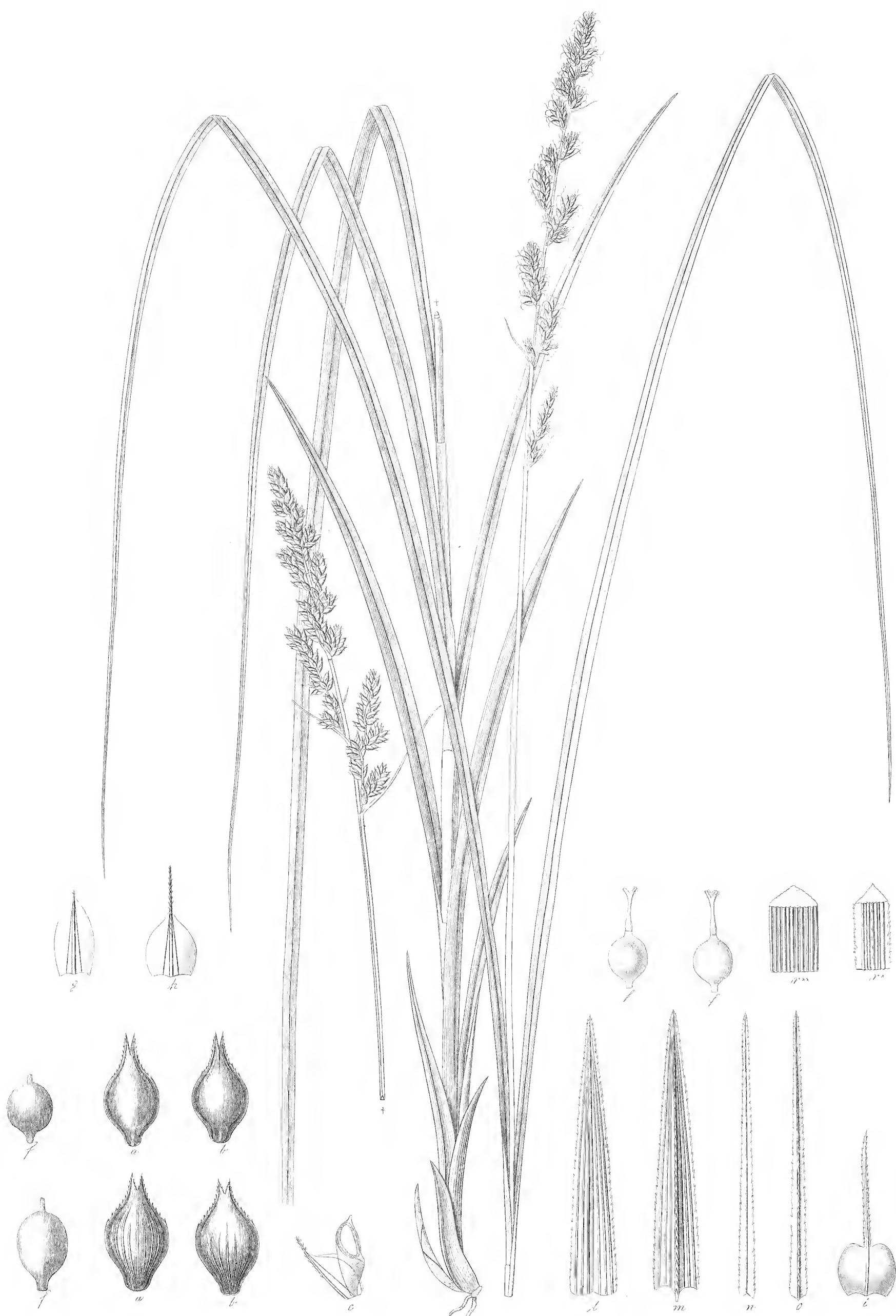
*CAREX THOMSONII*

D'Albert. det.

Clergeé. sc.



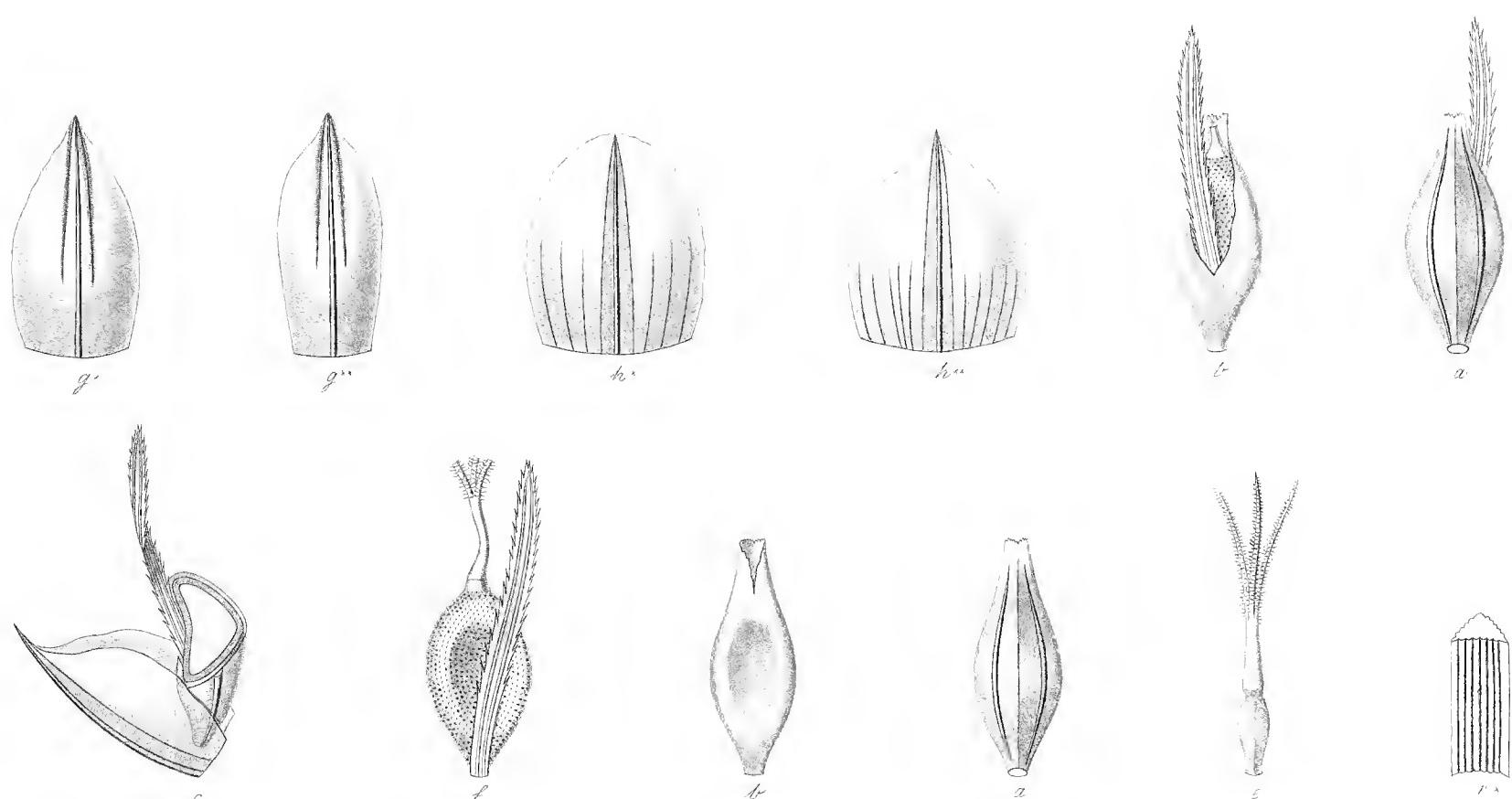
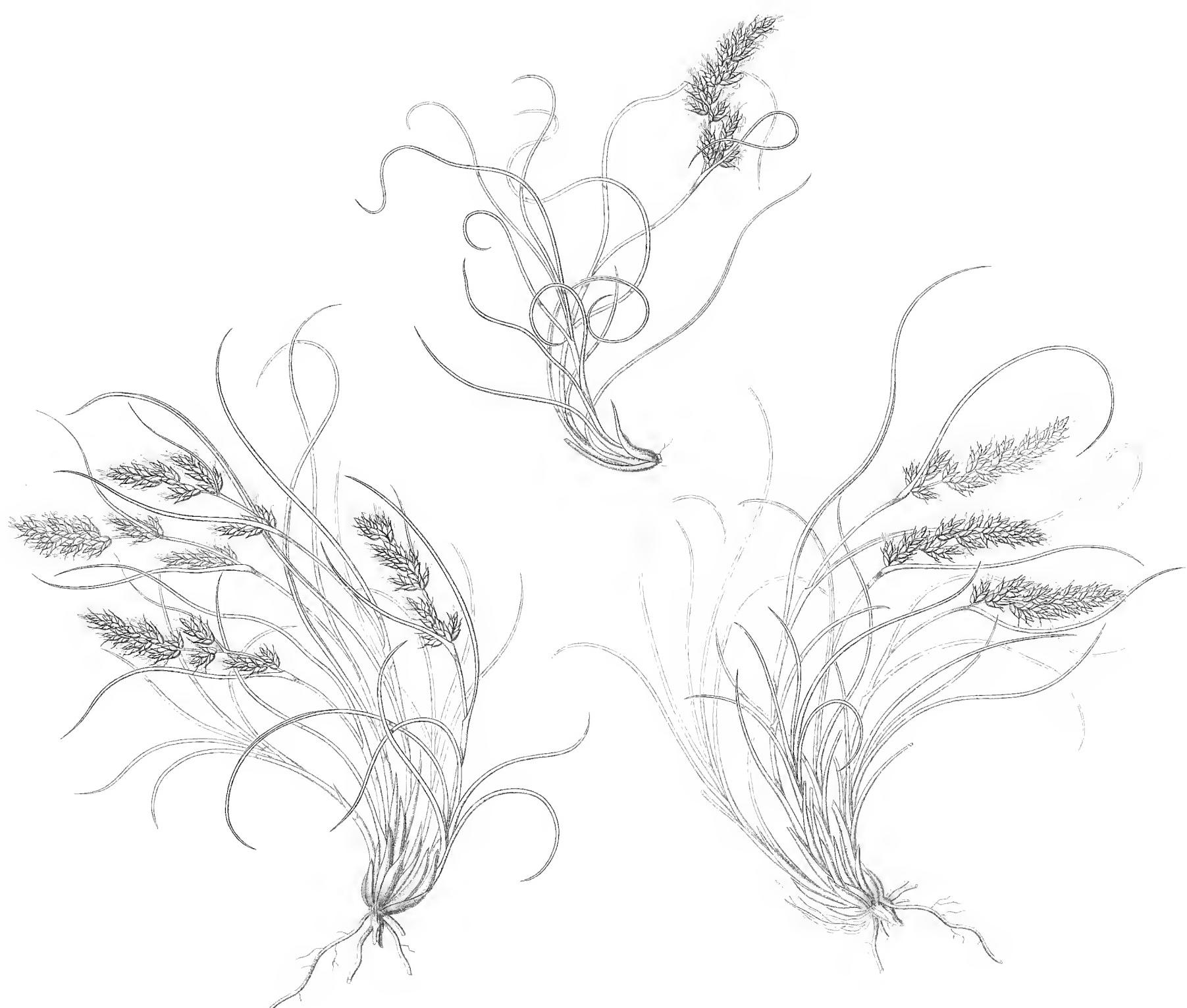
C. N U B I G E N A.



14.



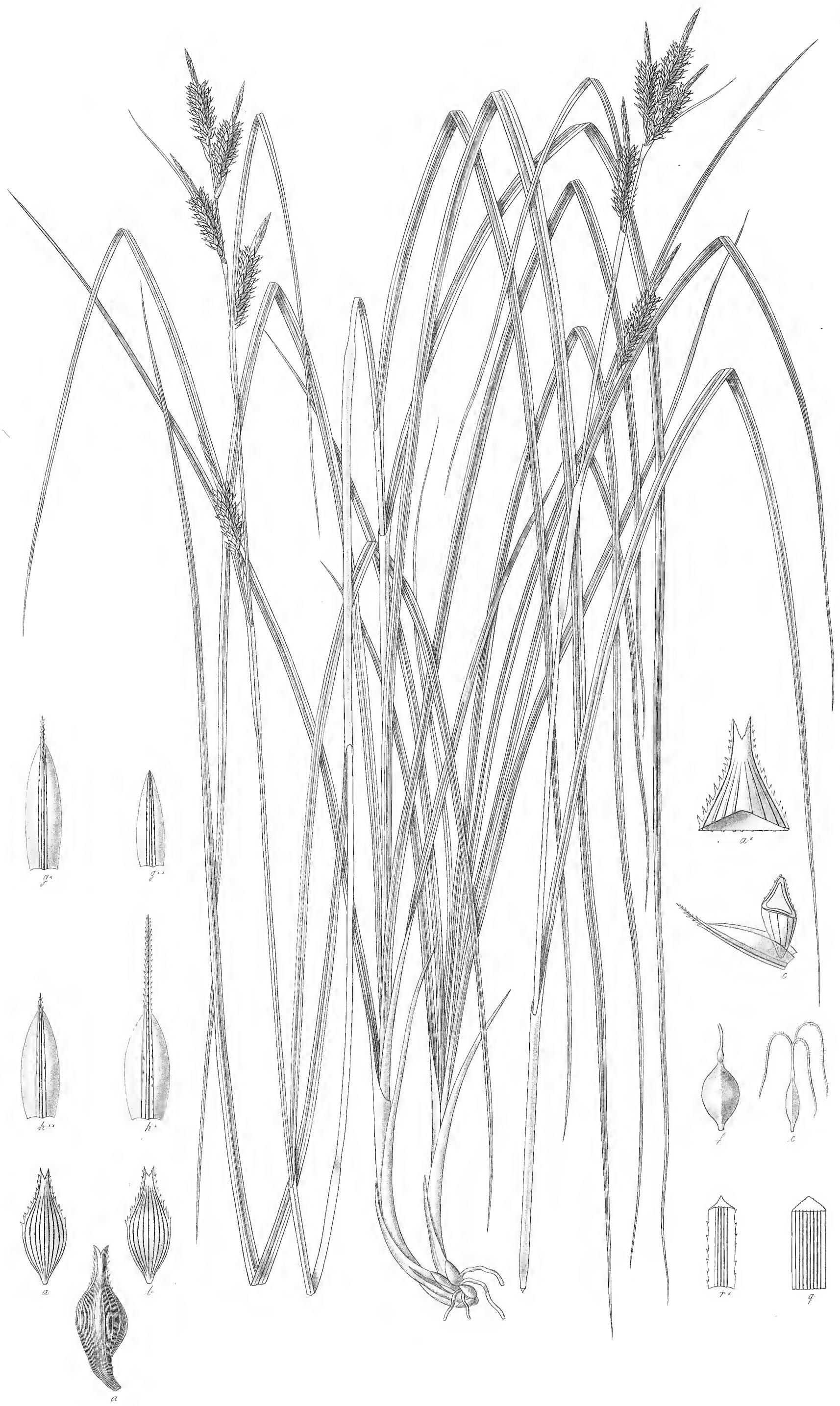
C. WALKER.



C. CURVATA.



C. SETIGERA. VAR.



C. SPICULATA.

M

t. 7

C



C. COMPOSITA.



C. NOBILIS.



C. NOBILIS. B.

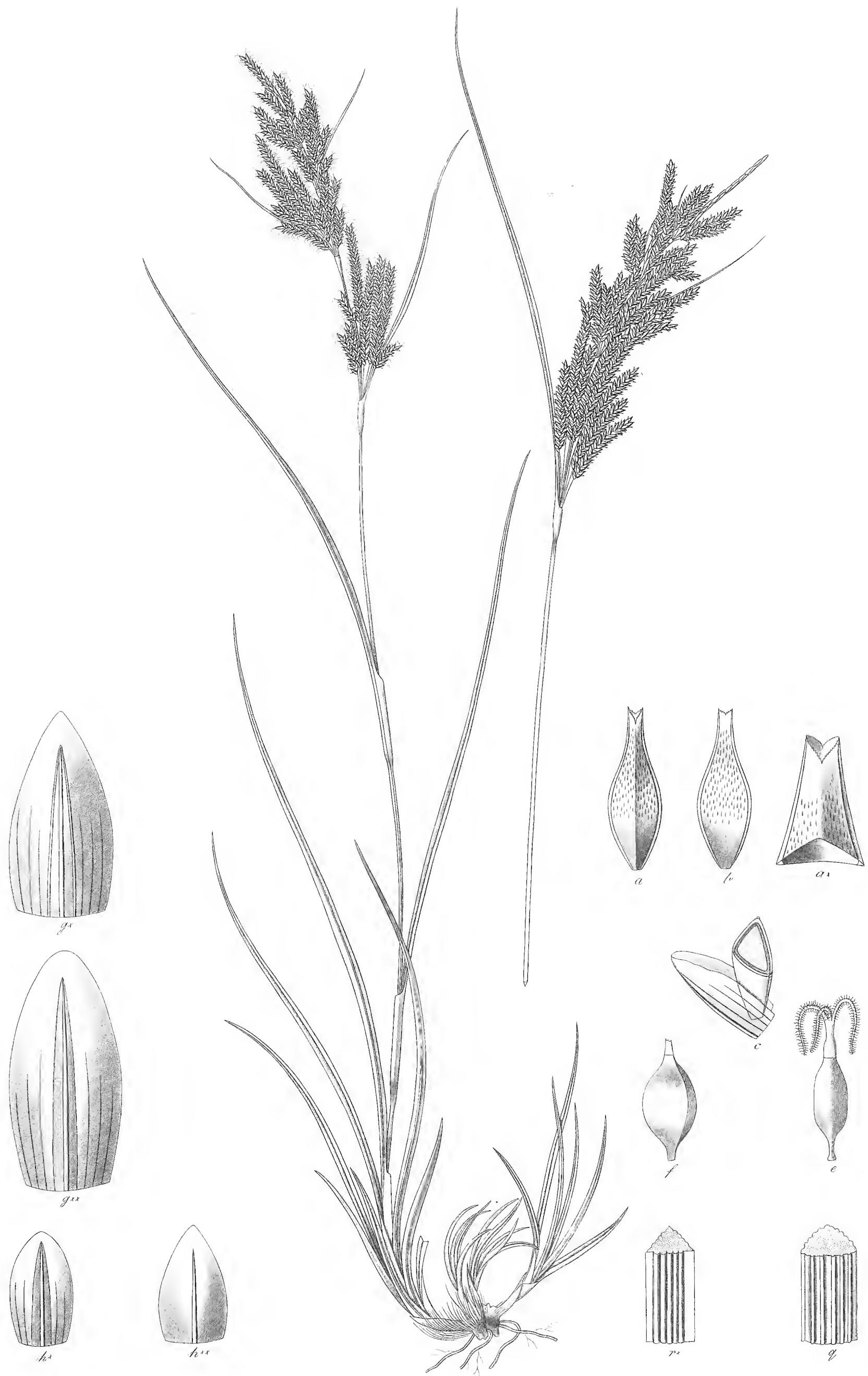


C. NOBILIS. Y.





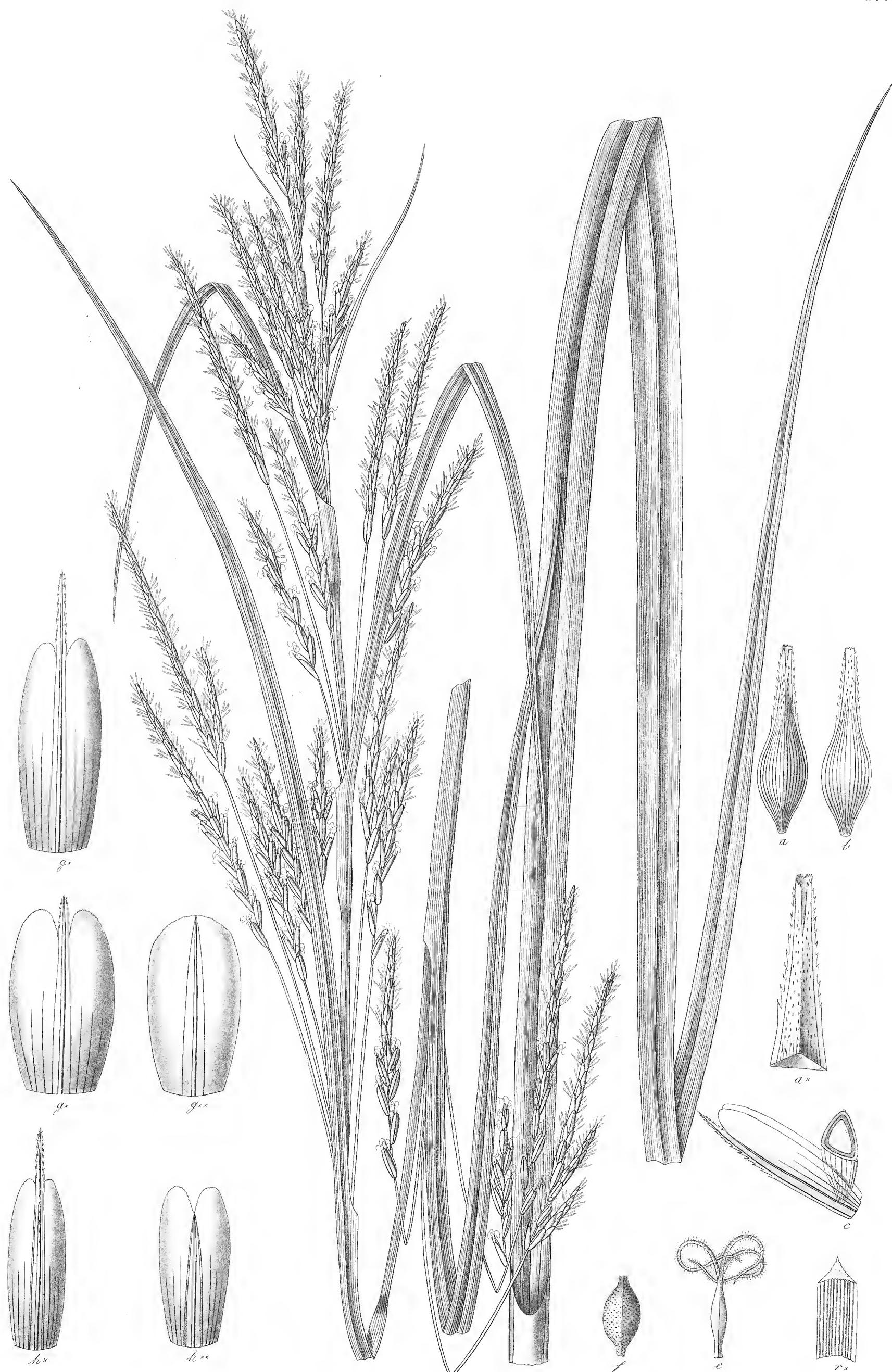
C. POLYSTACHYIA.

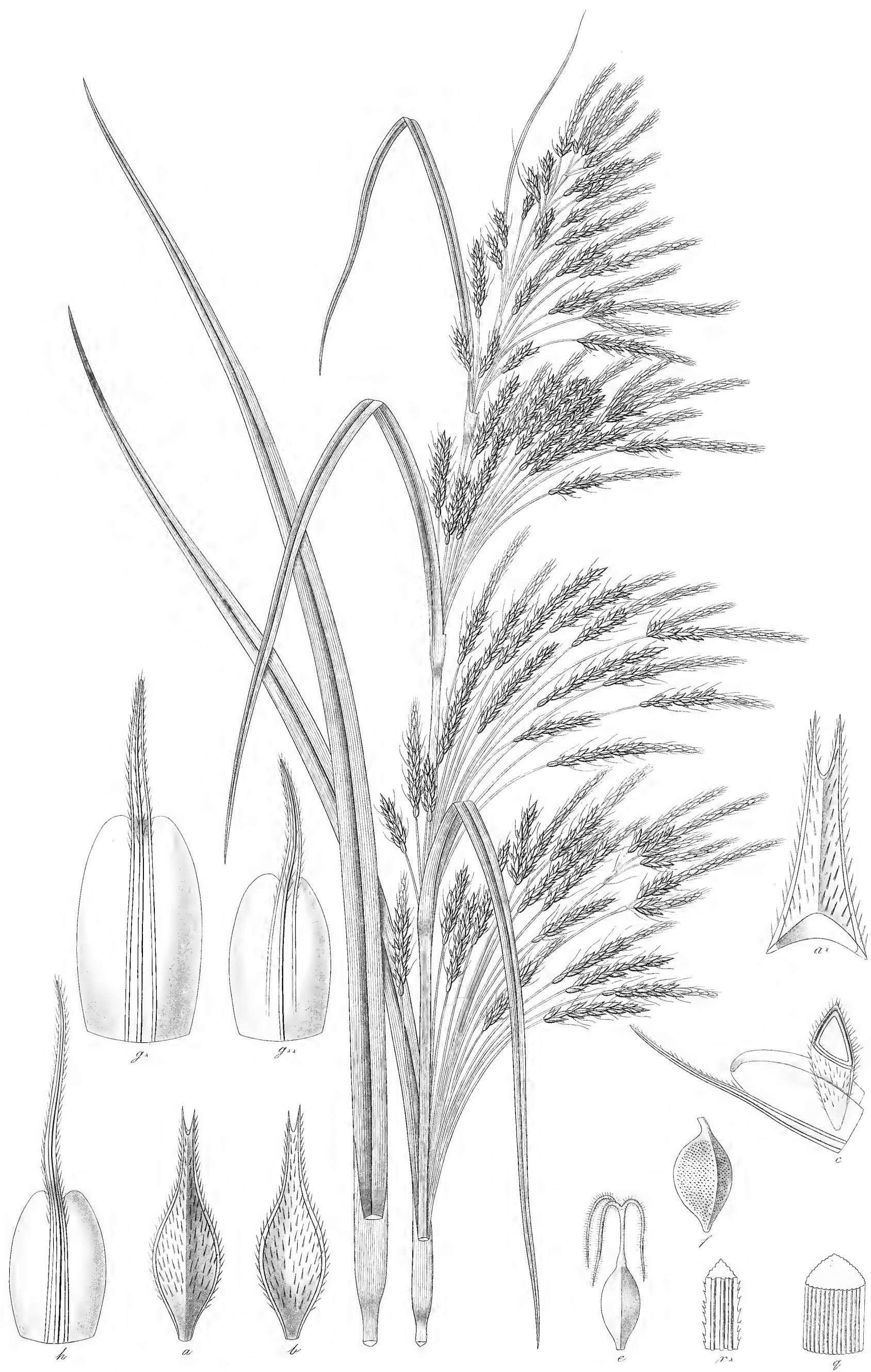


C. P U L C H R A.

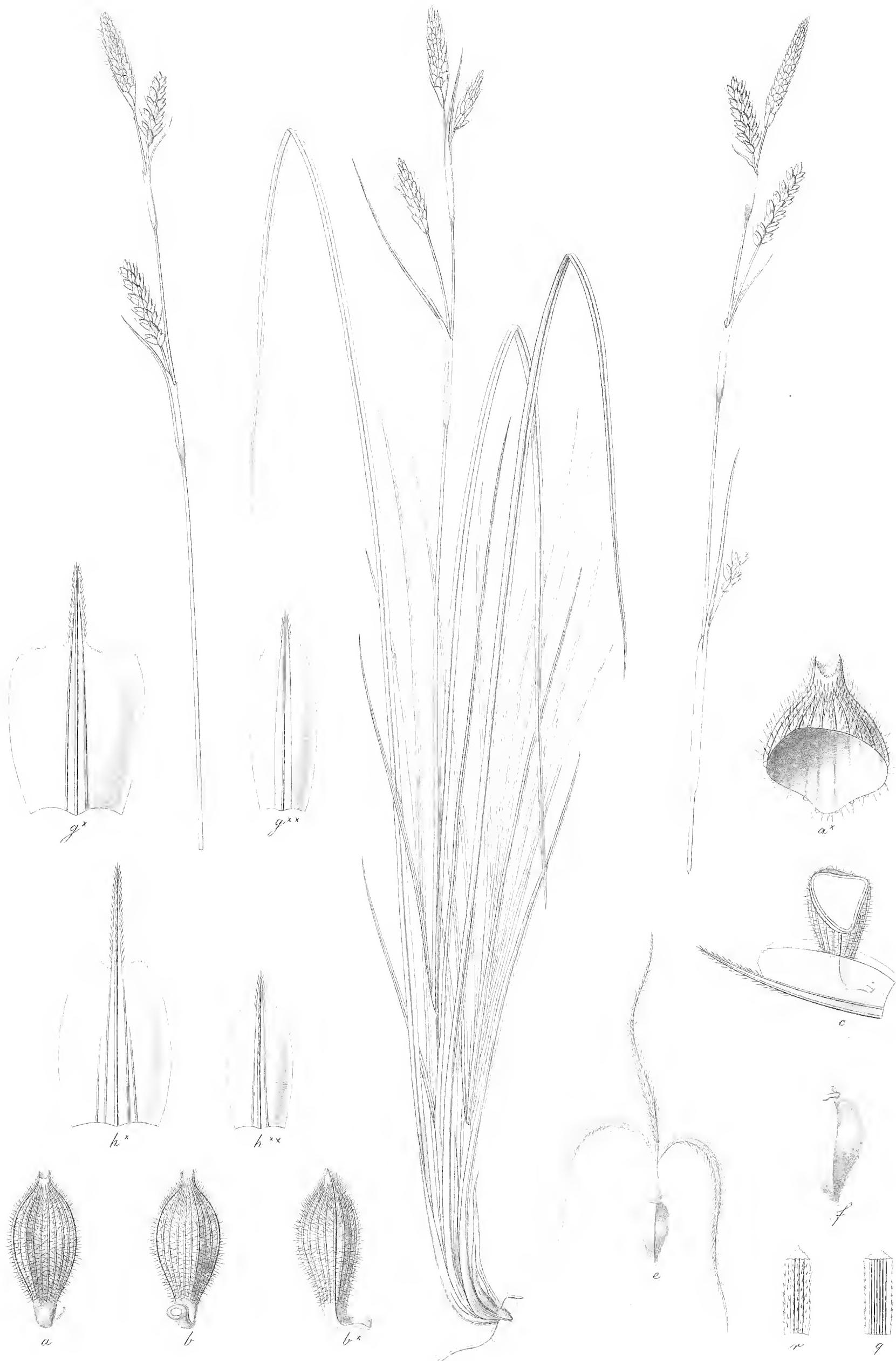


C. INSIGNIS.



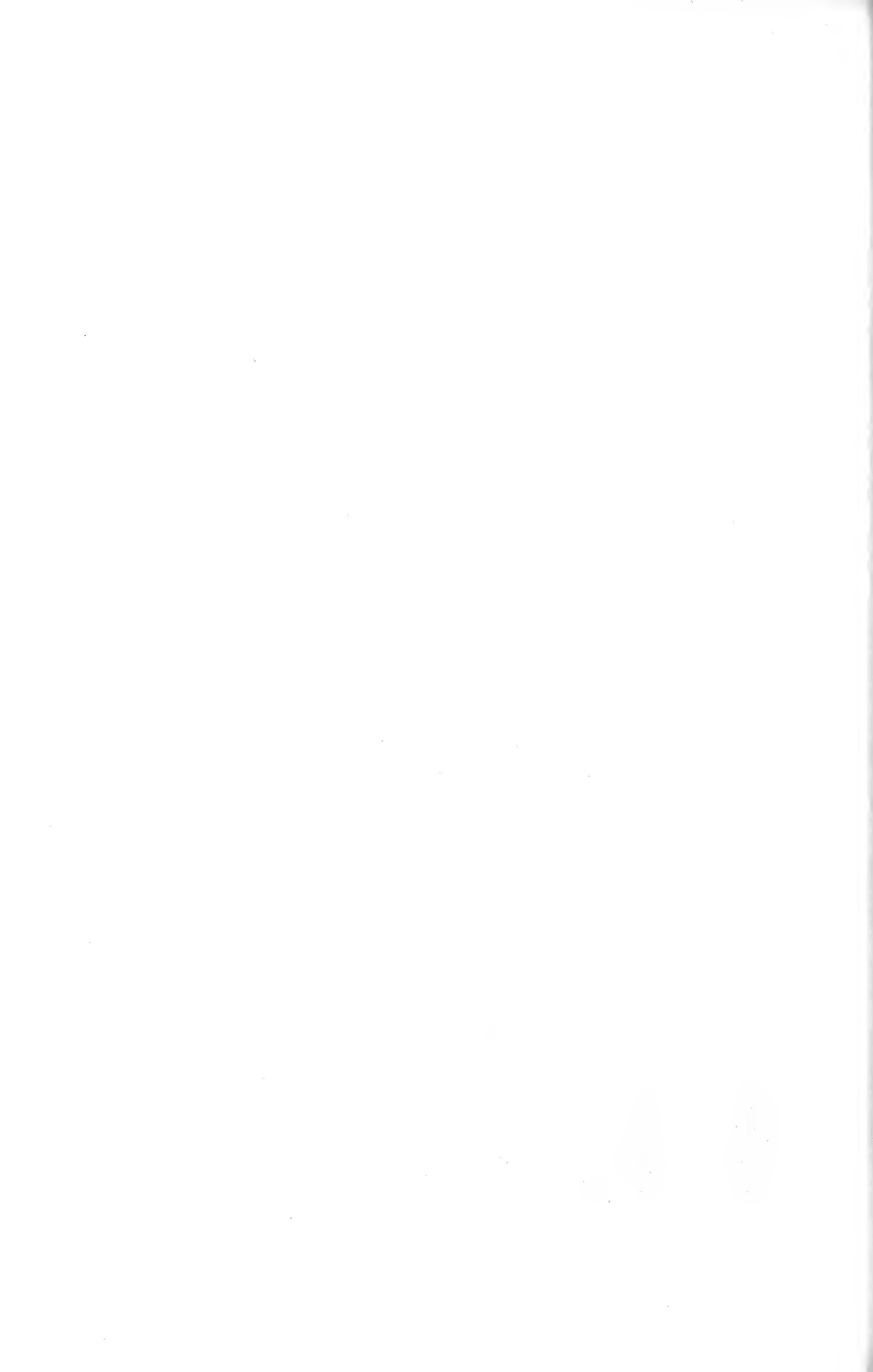


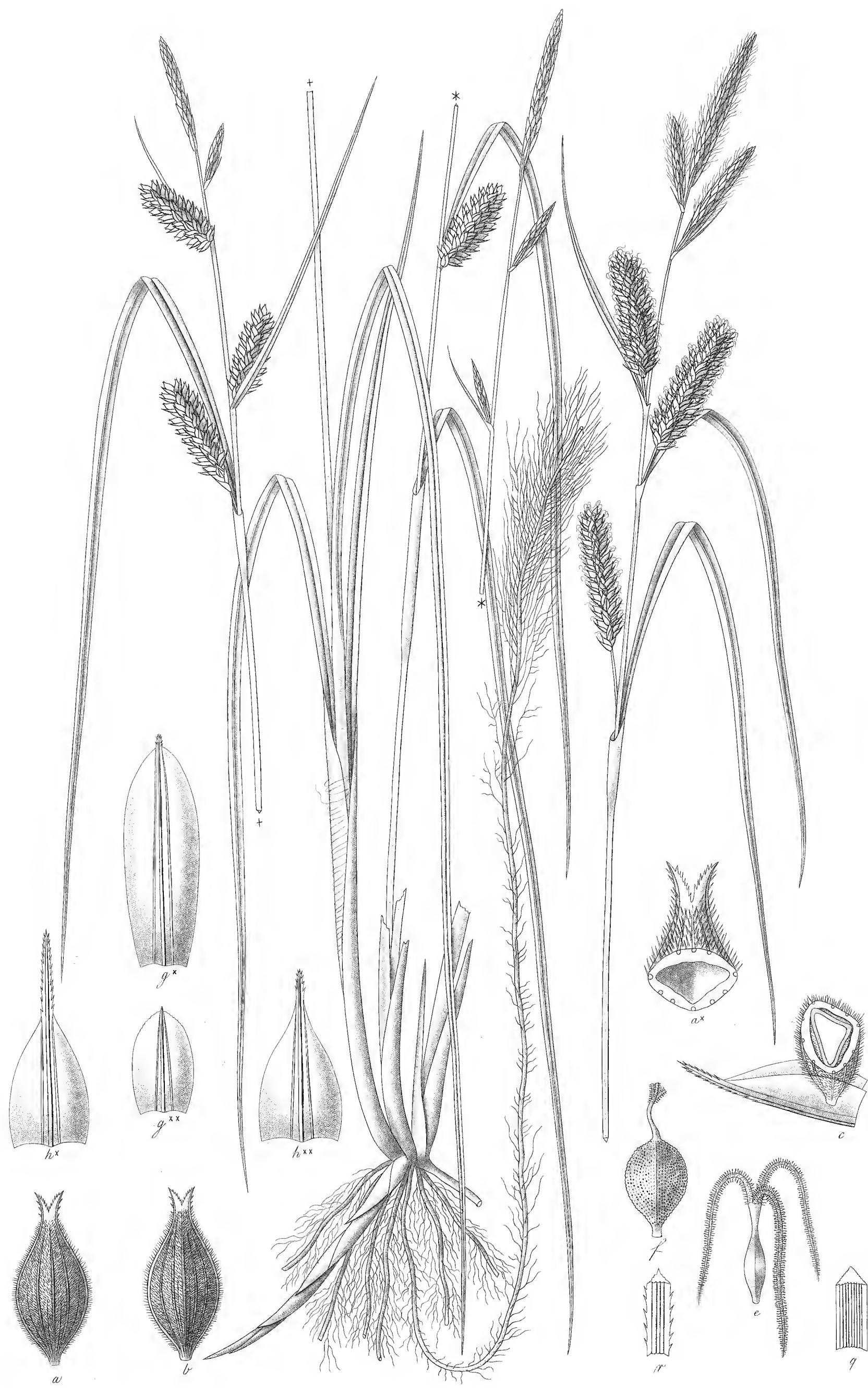
C. DALTONI.



C CARDIOPLEURA.

*M.**P.*



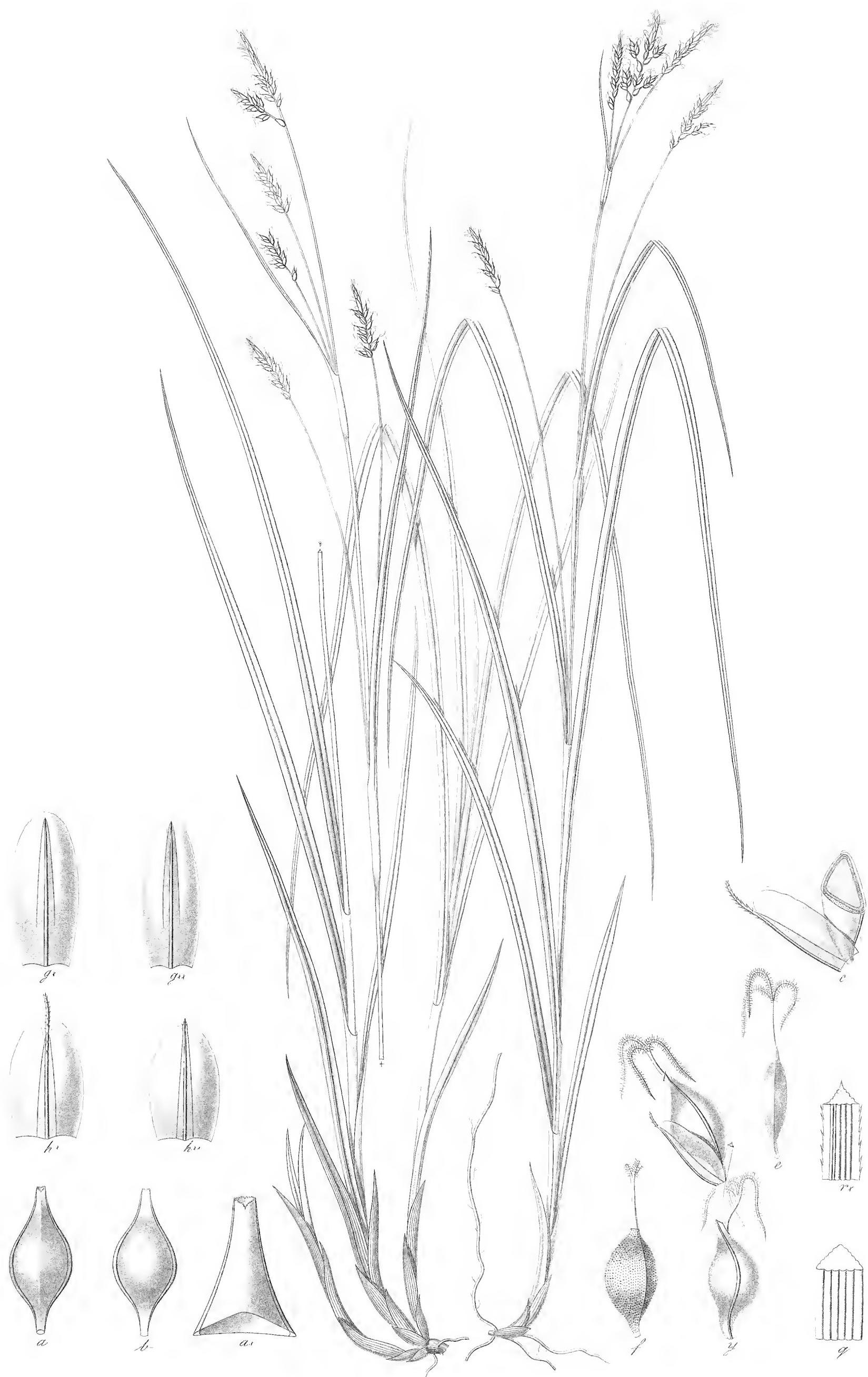


C. WALLICHIANA.



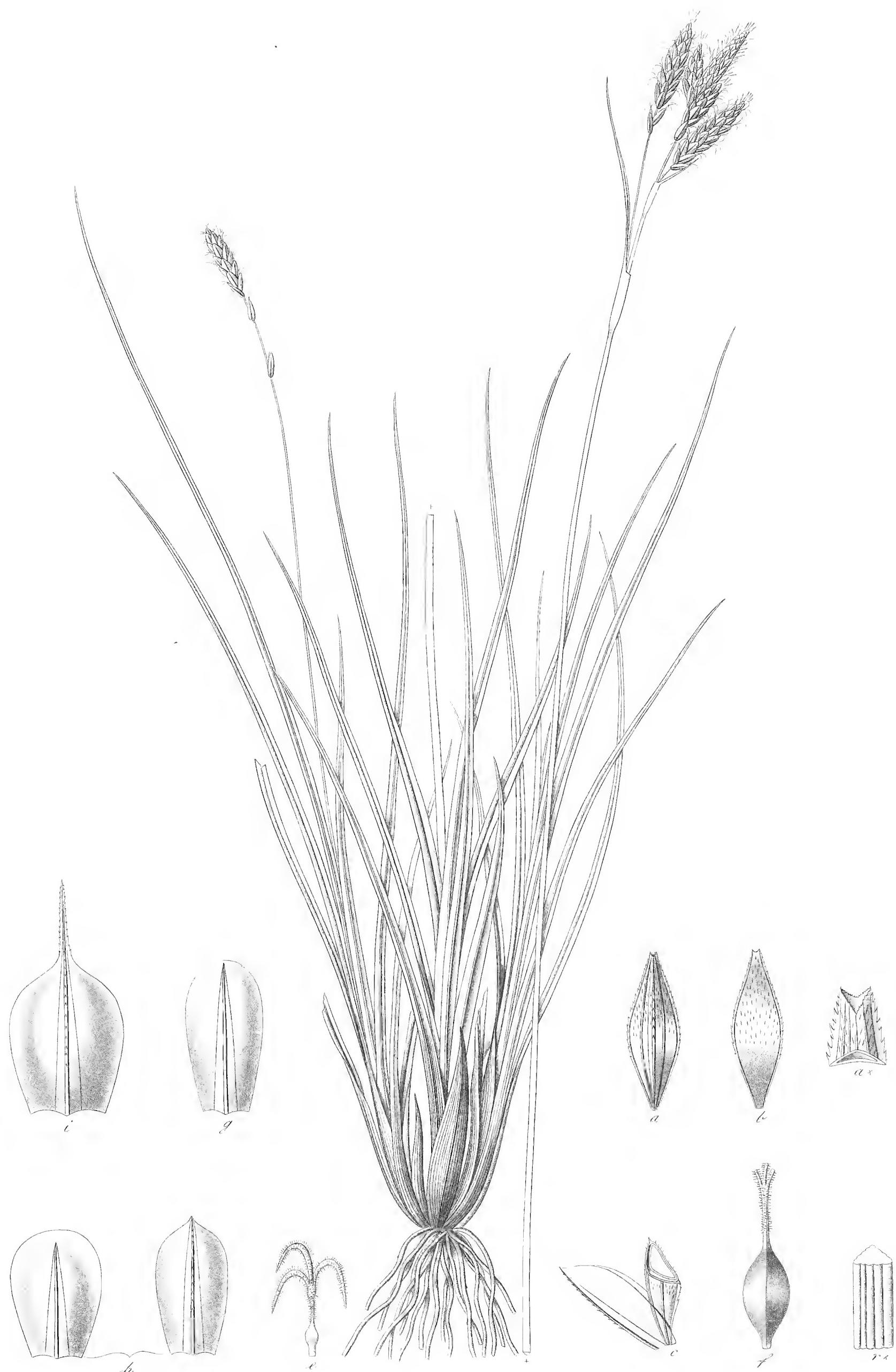
C. ROYLEANA.

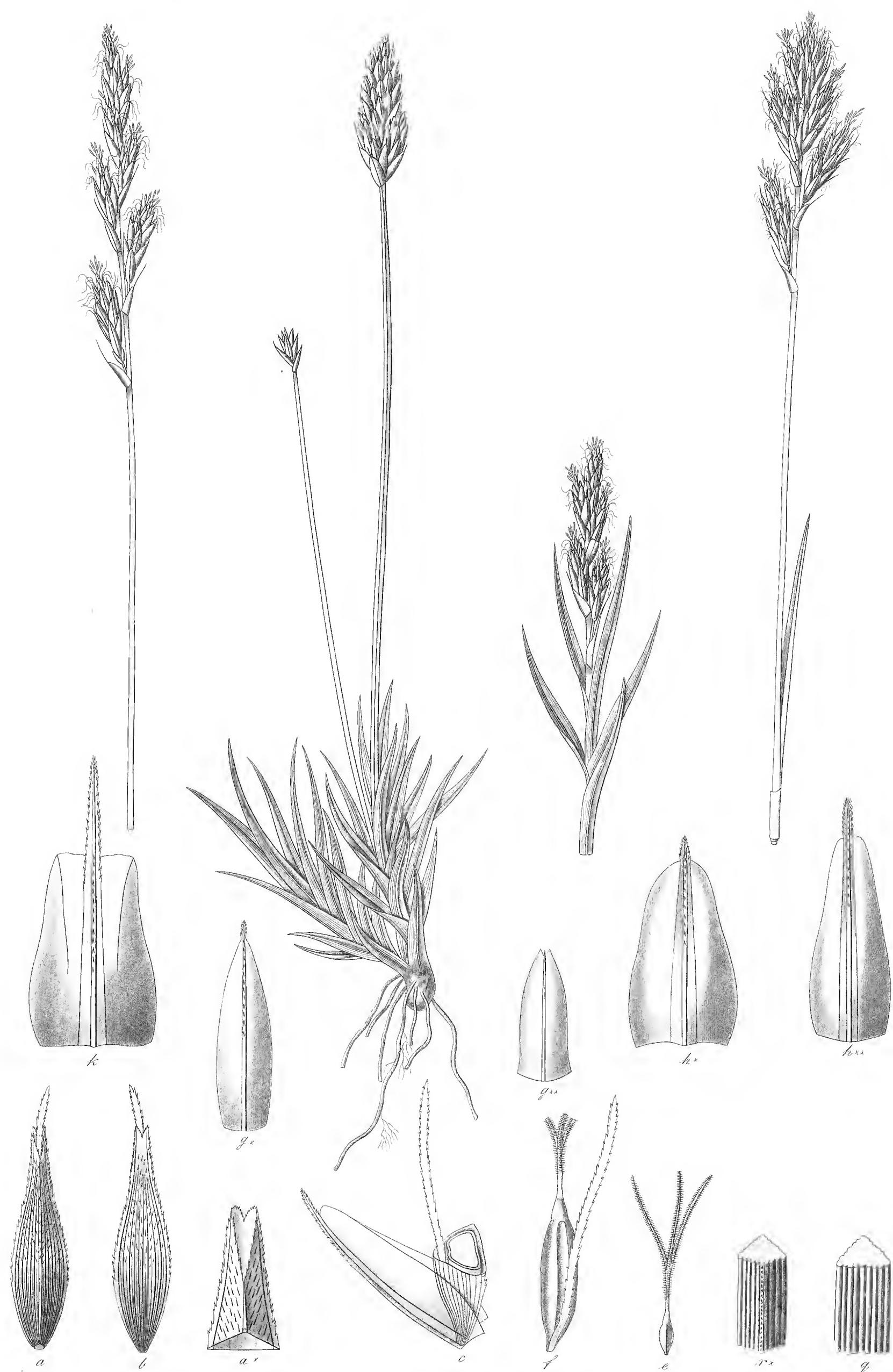
*M.**C.*





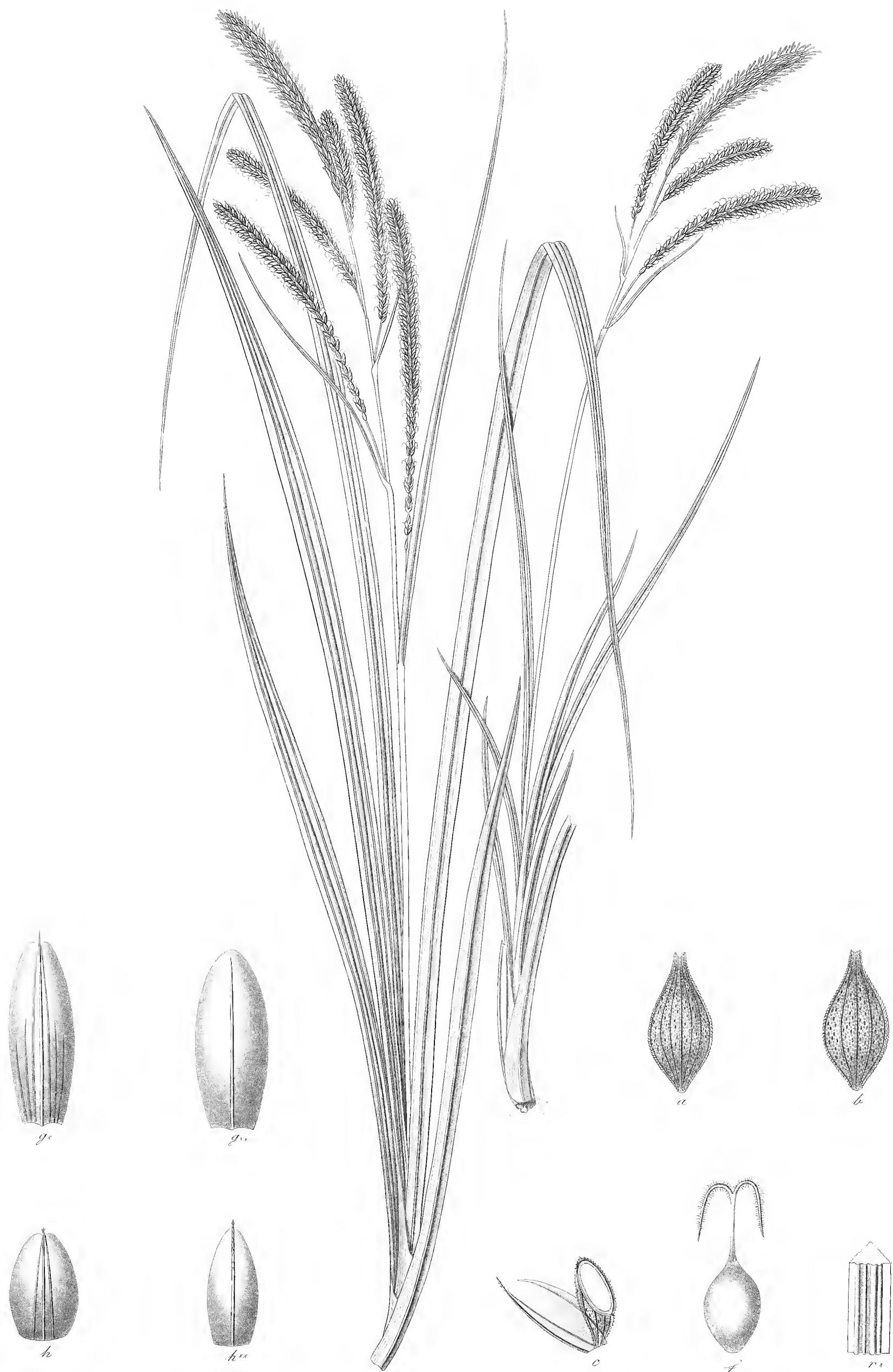






C.UNCINOIDES.

t. 24.







THE JACKIANA.

M.

6



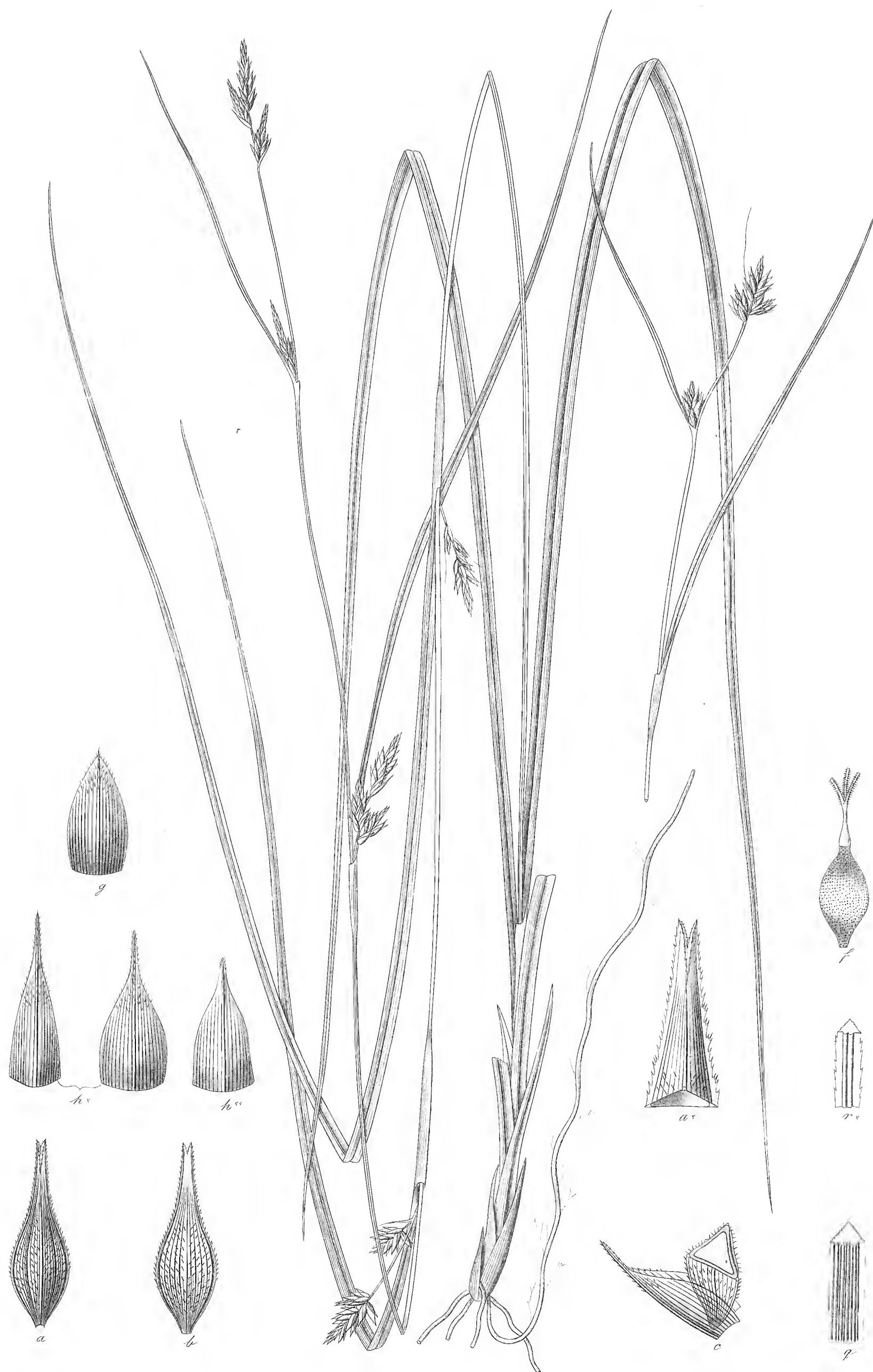
C. M A C U L A T A .

M

c



t. 28.



C. LEUCANTHA.

C.



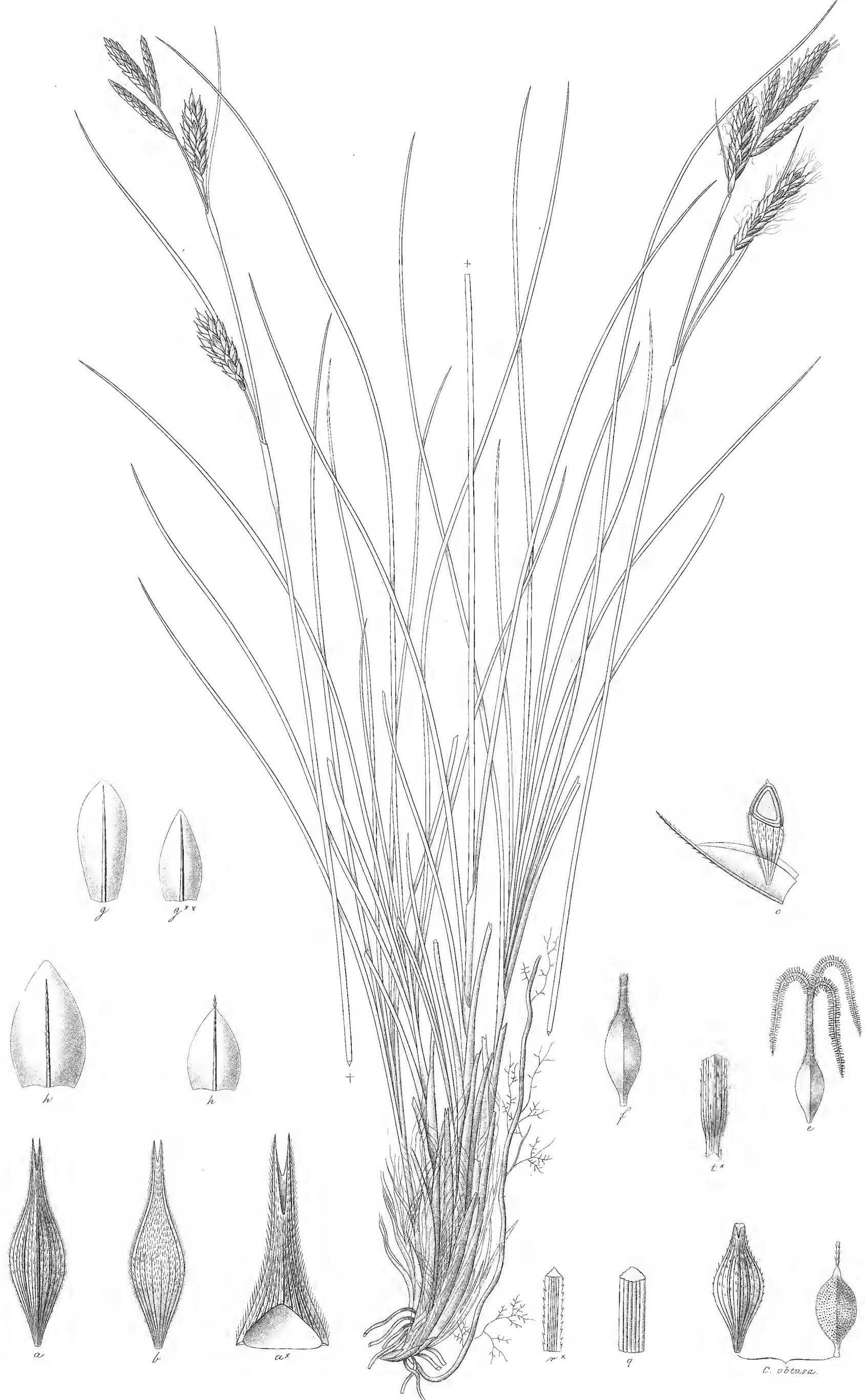
C. SPICIGERA.



C. WIGHTIANA.

*M.**G.*

t. 31.



C . H I R T E L L A .

M.

6.

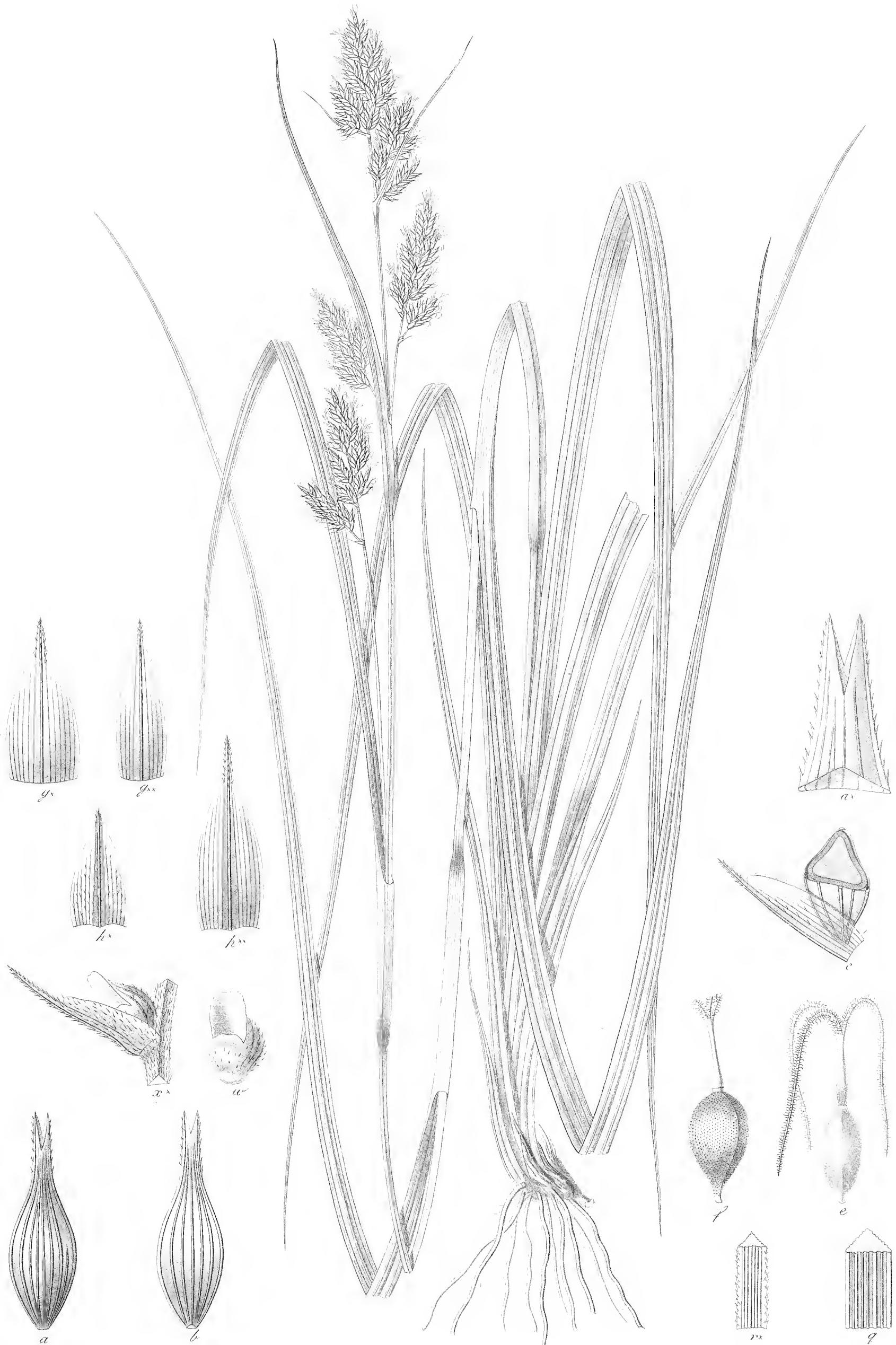


C. HORSFIELDII.



C. RAFFLEIANA.

t. 34.

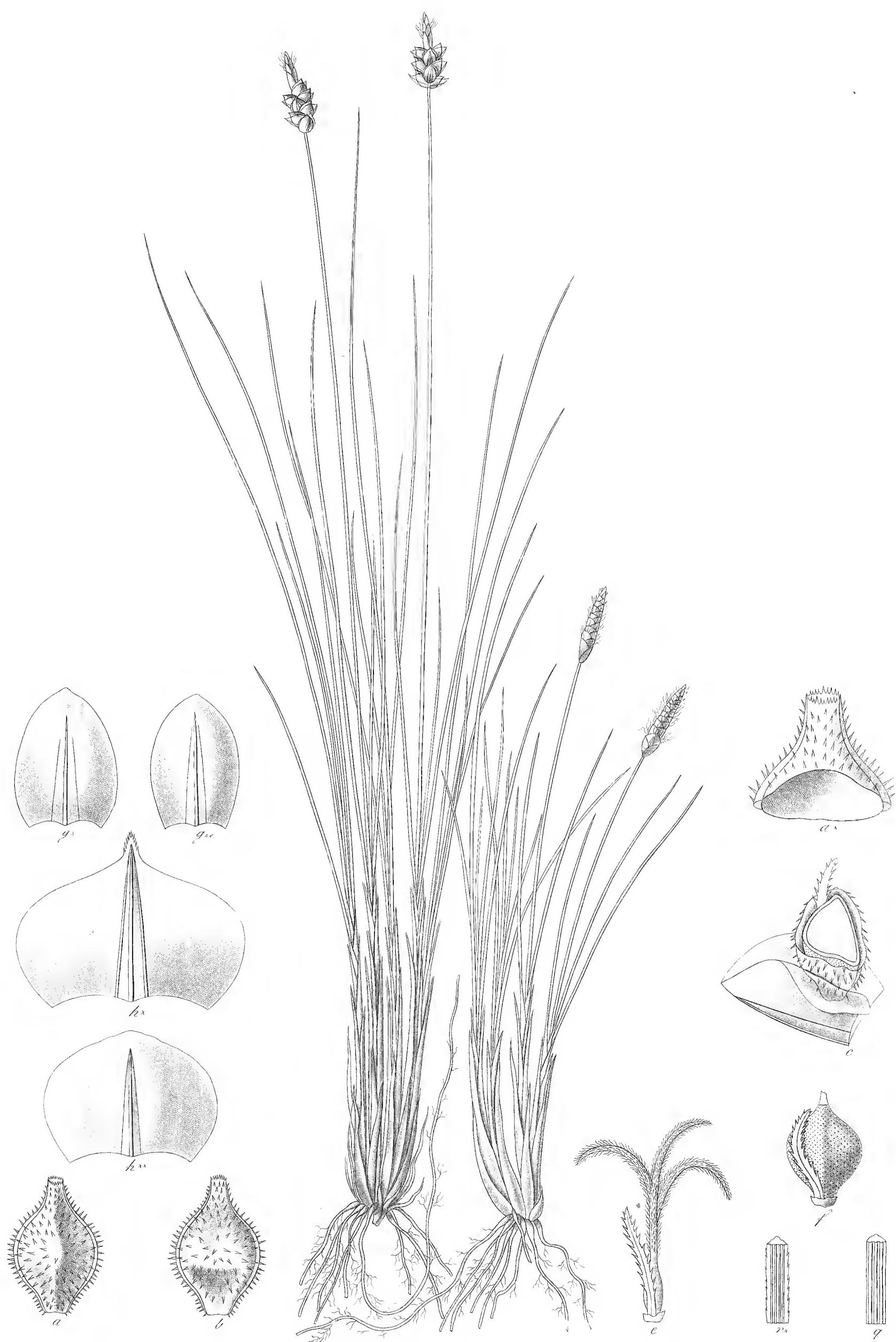


C. THYRSIFLORA





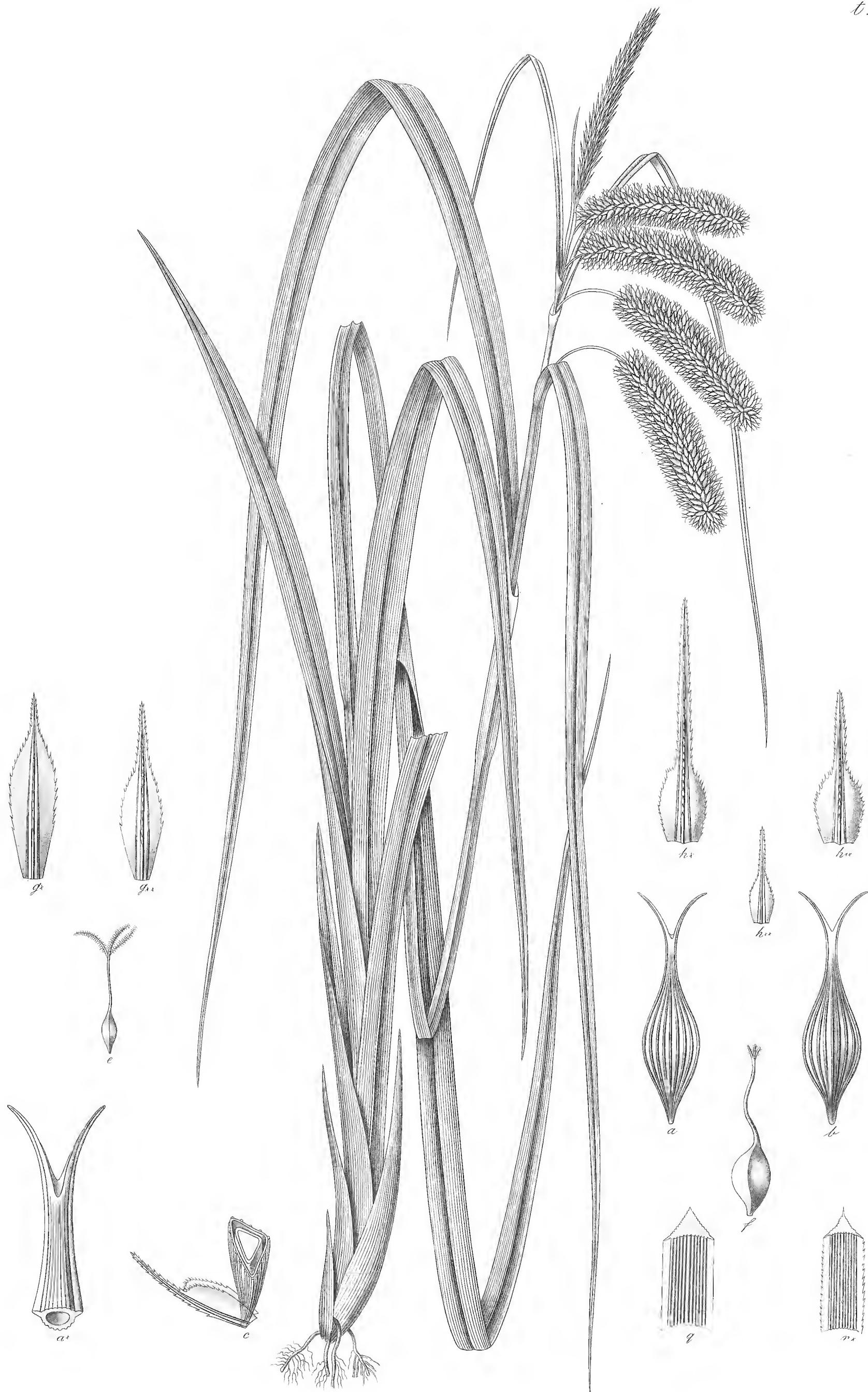
C. CHINENSI



C. FILIFOLIA.

*M.**C.*

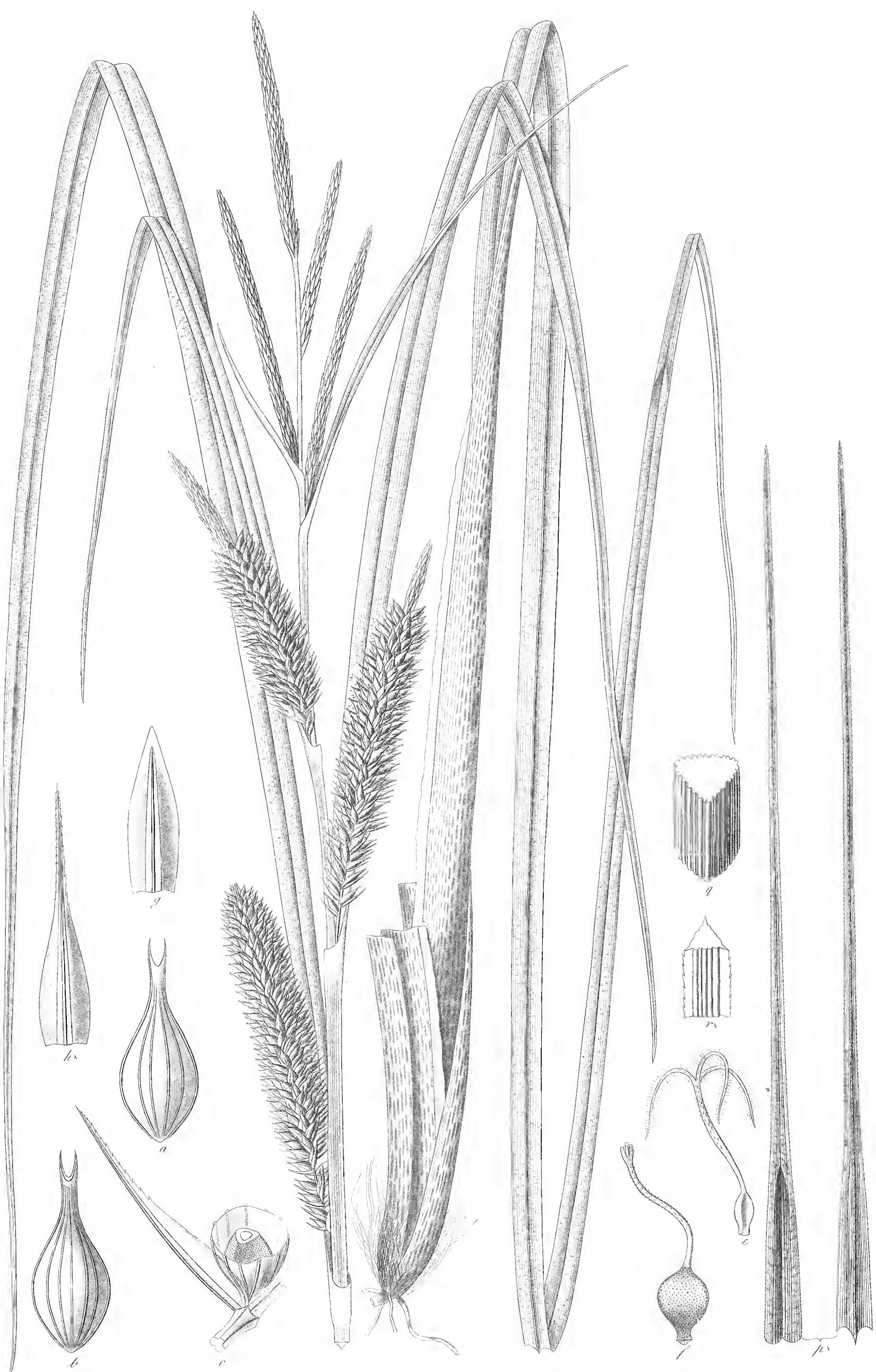
t. 38.



C. COMOSA.

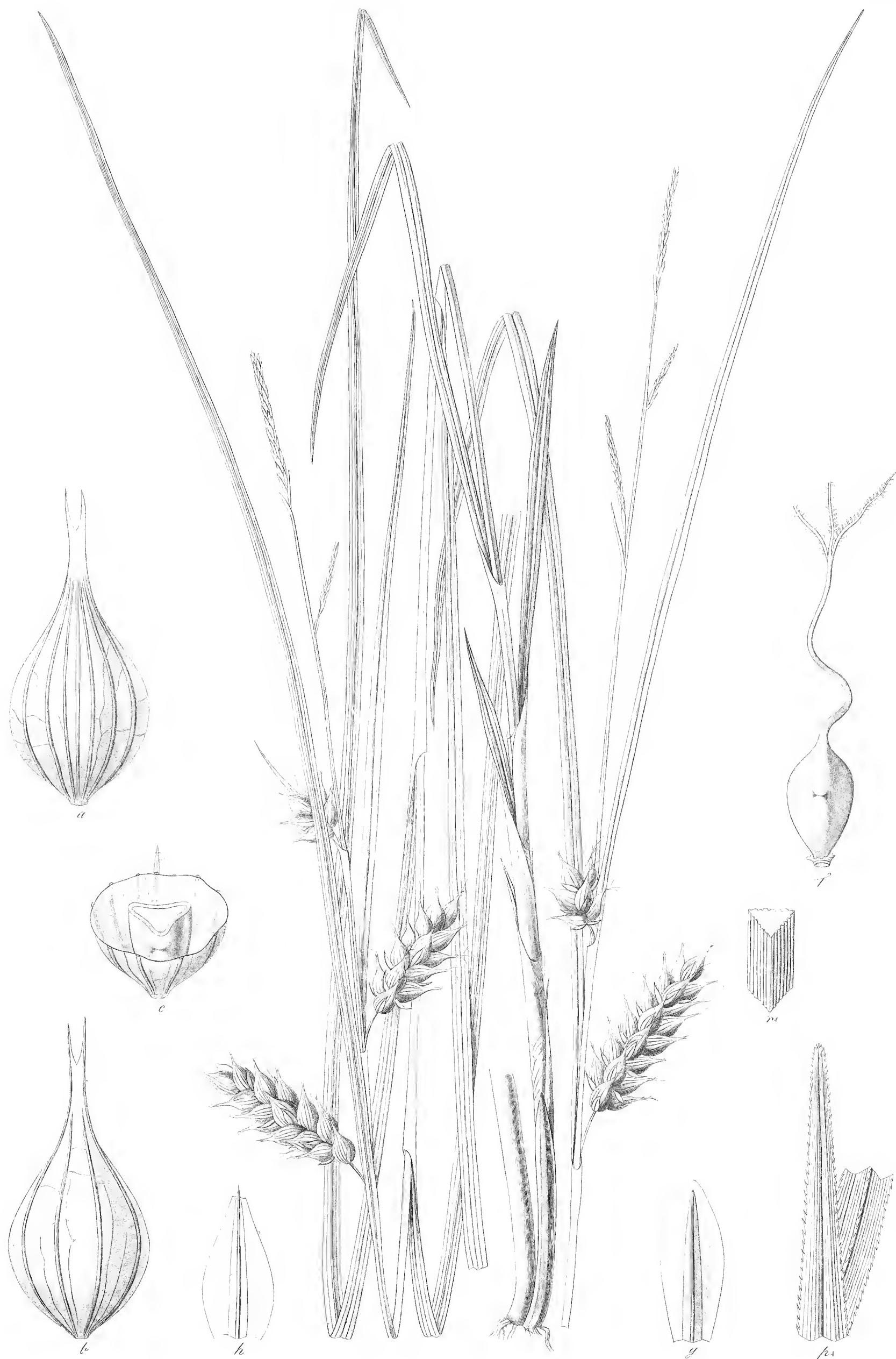
11

6



C. UTRICULATA.

6. 40.

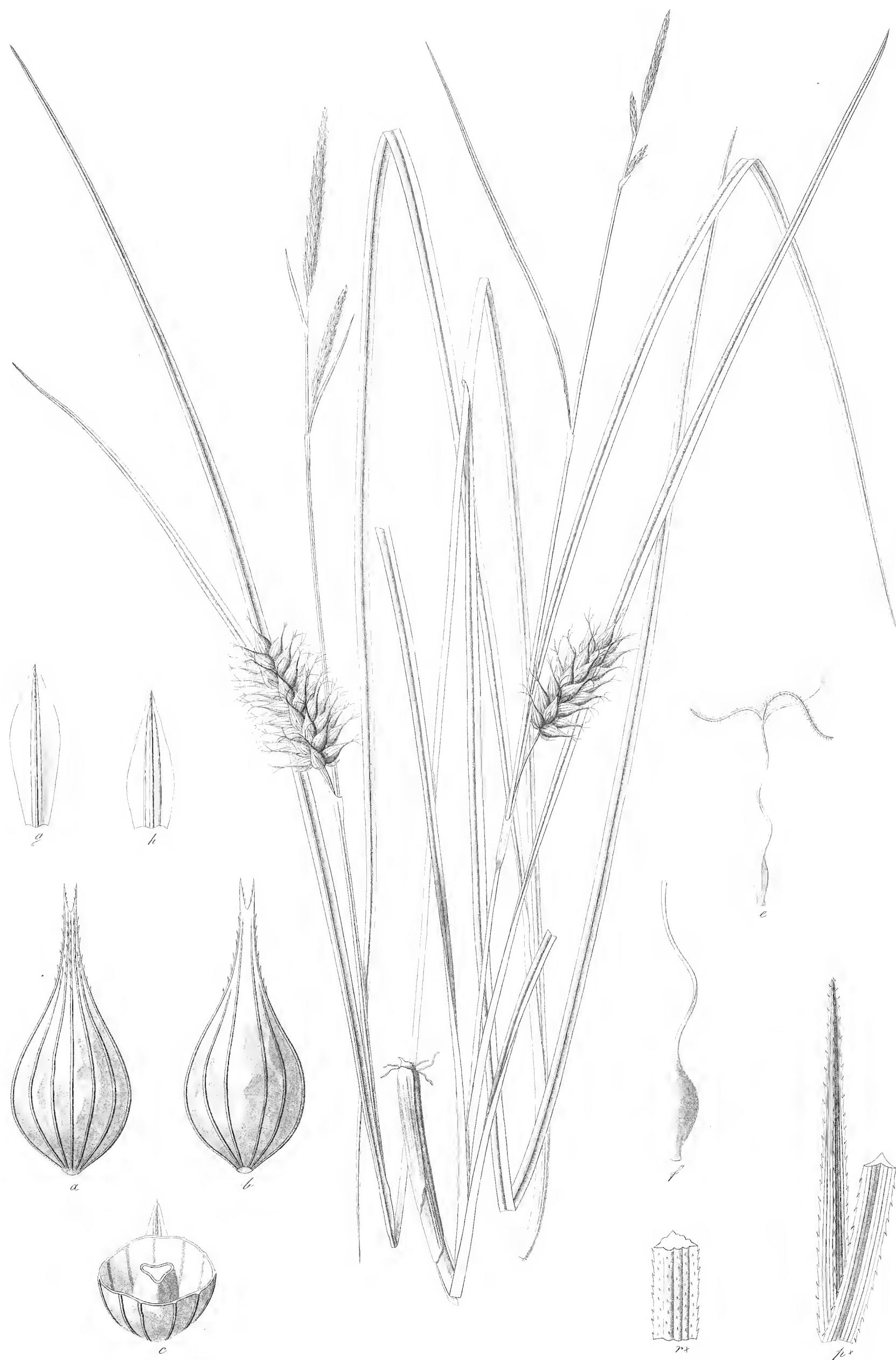


G. TUCKERMAN.

M

J.

t. 41.



C. BULLATA.

M

P

t. 42.



C. O L N E Y I.

M.

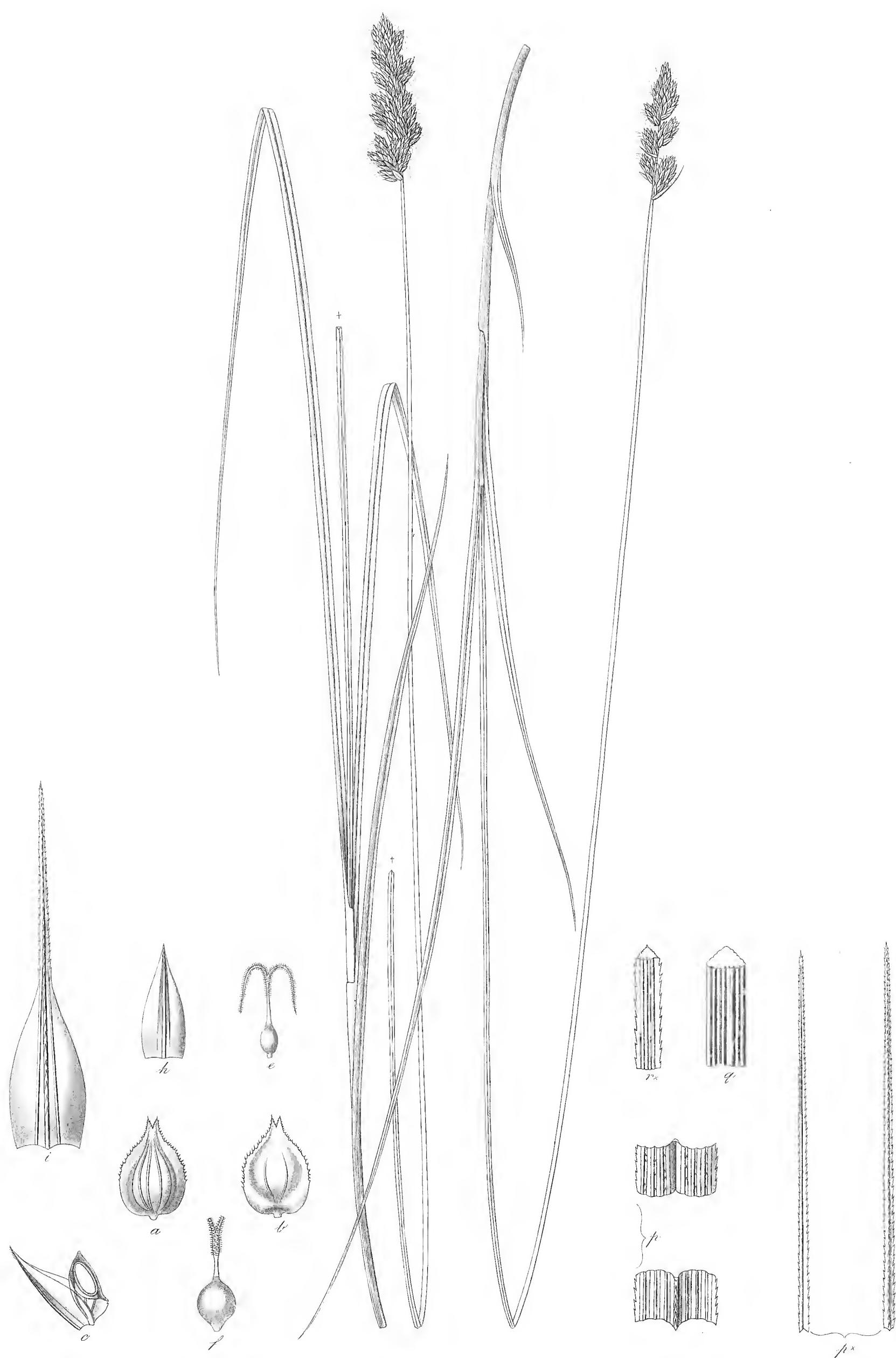
L



O. 43.



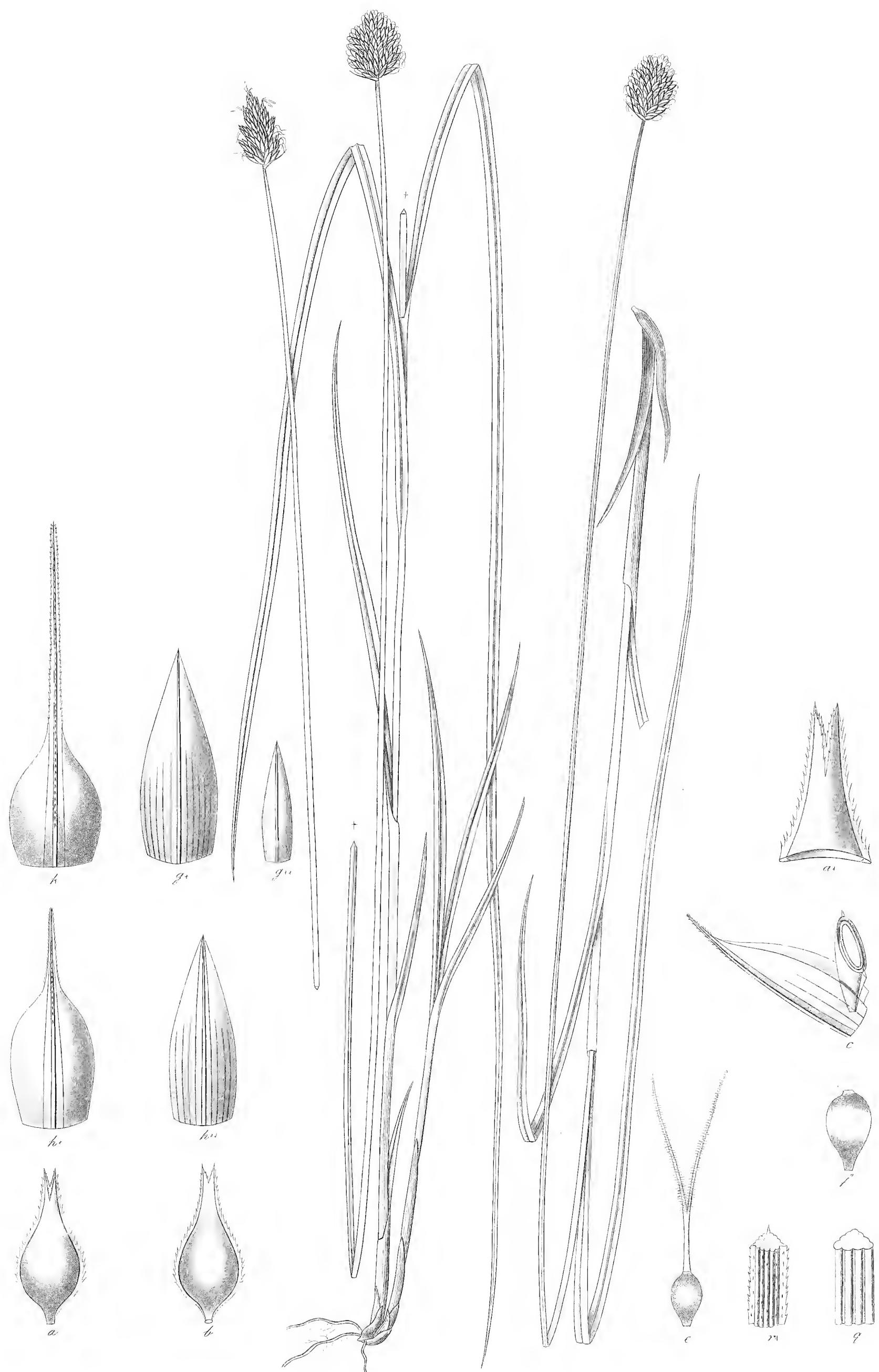


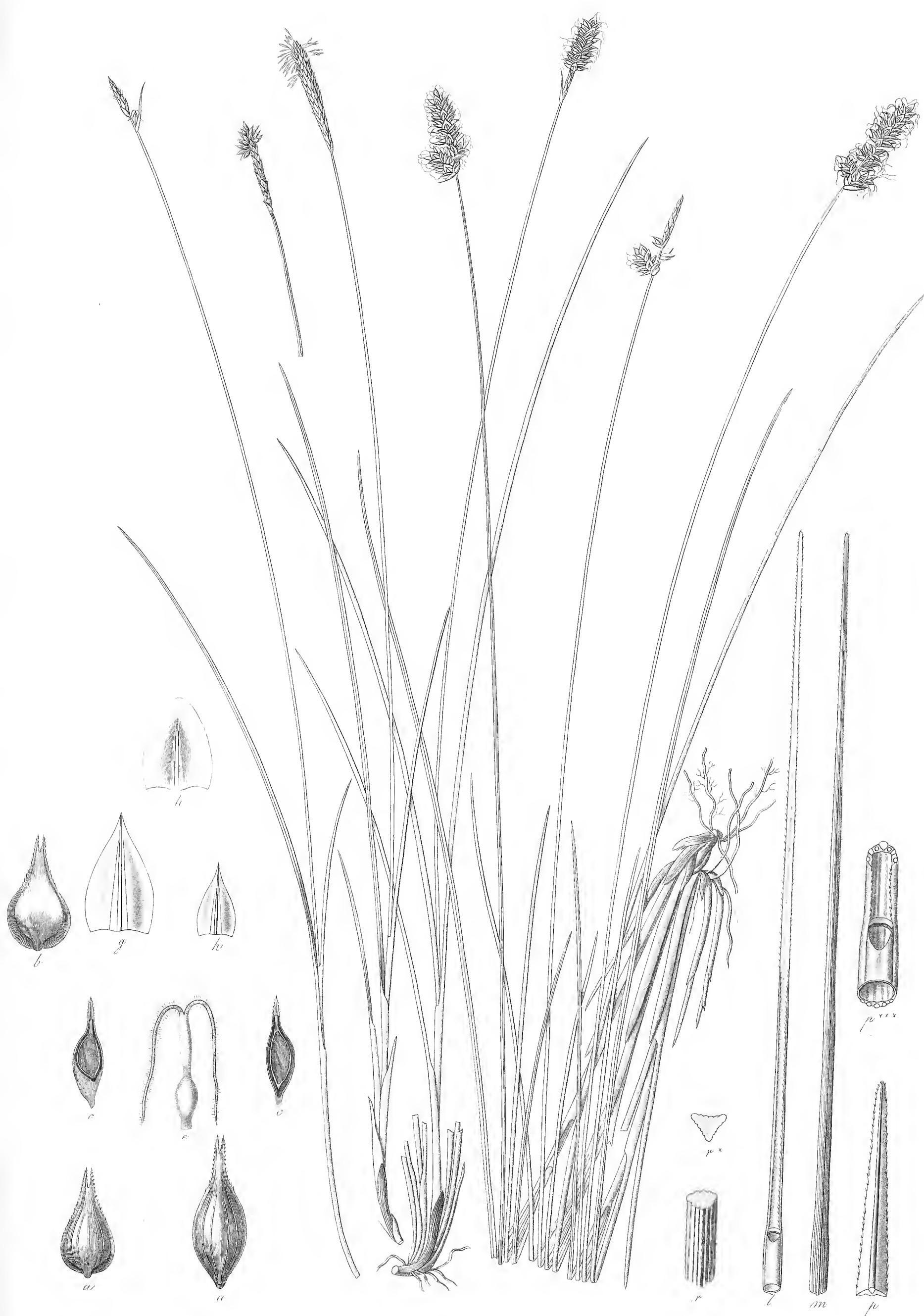


C. M A R G I D A.

*M.**C.*



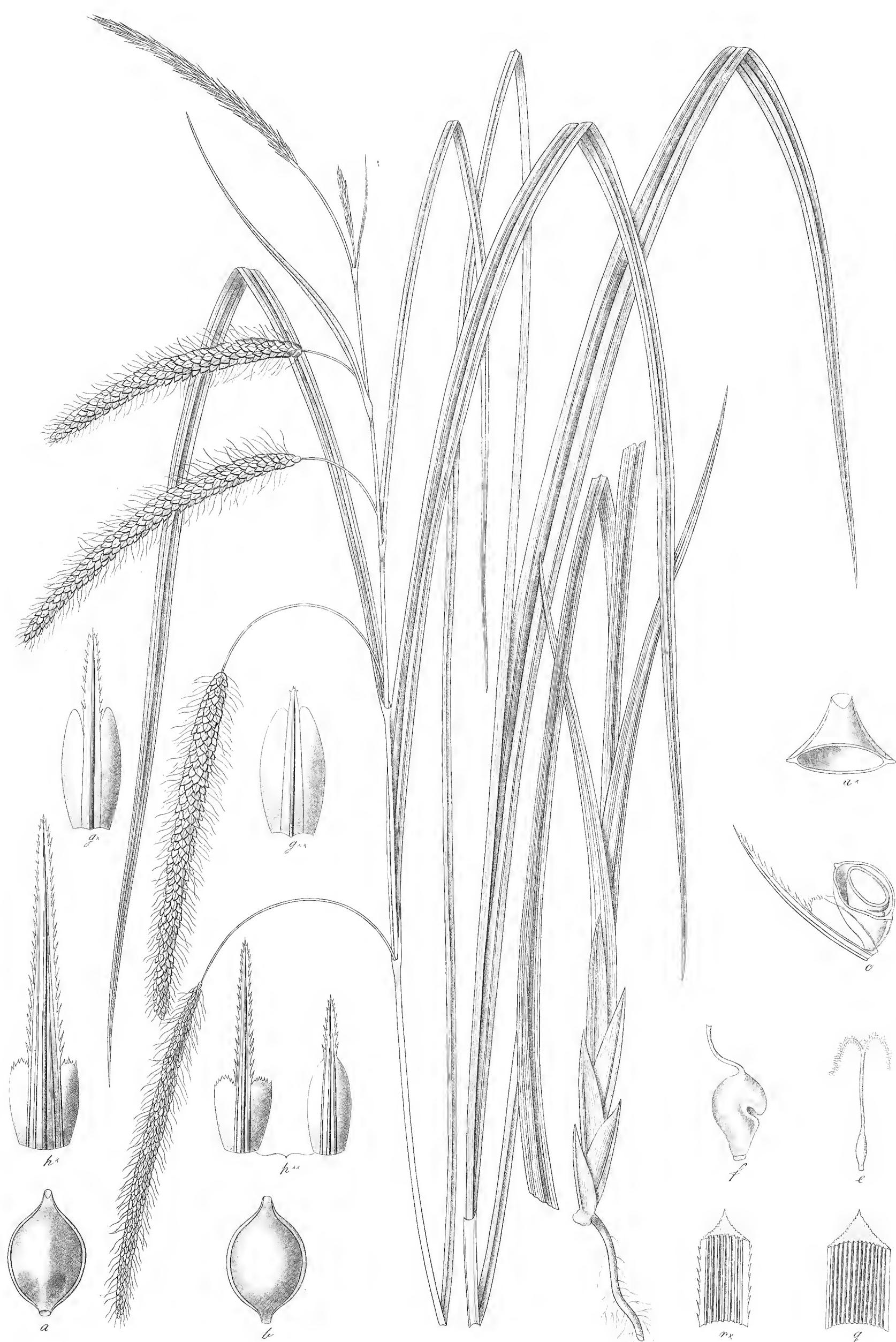






C. AMPLIFOLIA.

t. 49.

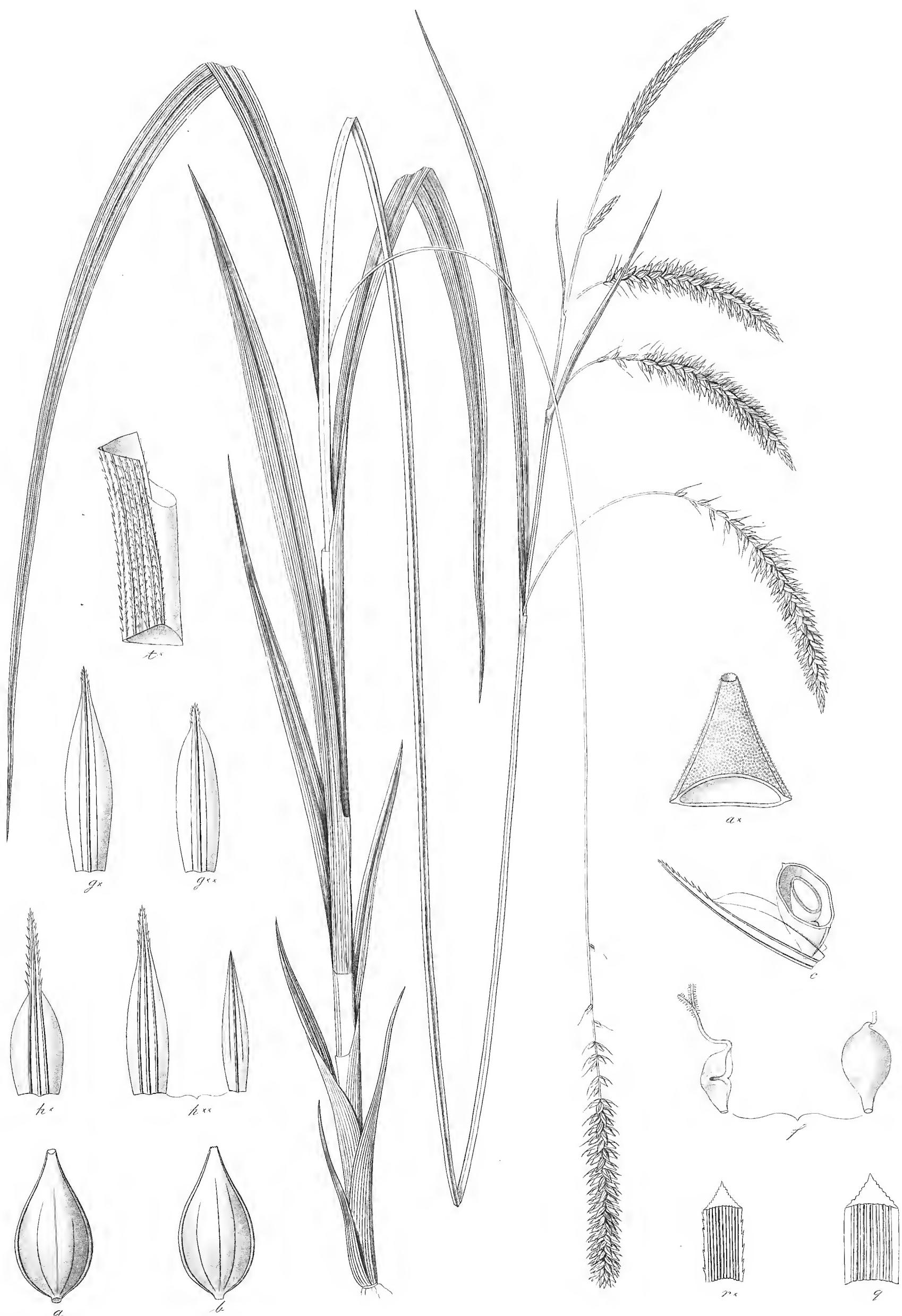


C. CRINITA.

M.

6

6.50.



C. G Y N A N D R A.

11

6



C. Houghtonii

Vincent Brooks Imp.

*C. siccata*

Rees lith.

C. siccata

Vincent Brooks imp.



Mauribert del

Rees coll

Vincent Brooks imp

C. liddoni



t 54

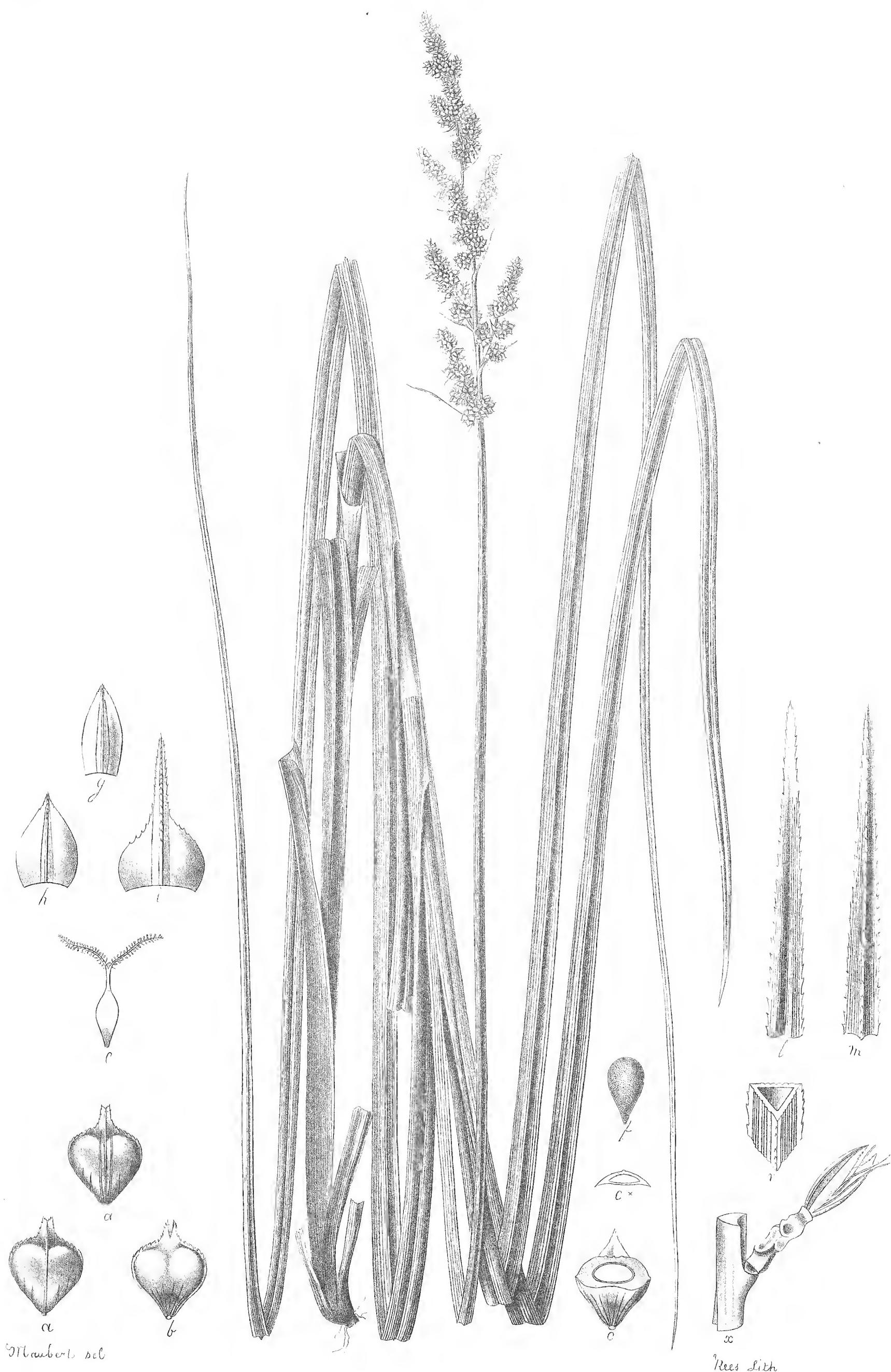


Mauribert sel

Rees Lith

C. Arida





Maurer del

Rees Lith.

C. decomposita

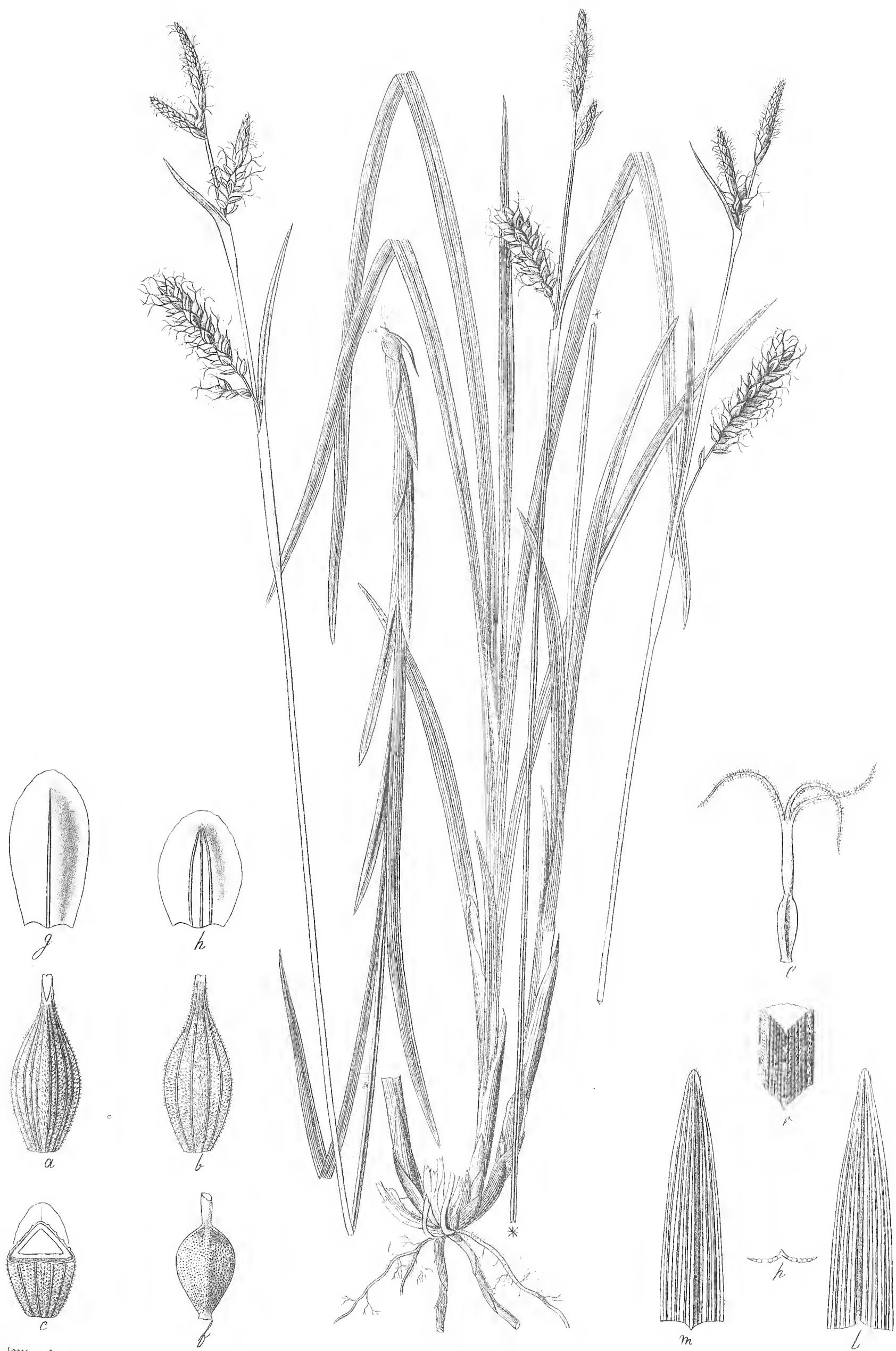
Vincent Brooks imp

t 56



1. *C. Torregi*
2. *C. alveata*

Vincent Brock, engr.



M. Lambert del.

Rees Lth.

Vincent Brooks, imp.

C. Halseyana



C. DAS Y C A R P A.

M.

o.



C. ARISTATA.

*M.**c.*



C. TAXIFOLIA.



C. P U B E S C E N S.

t 62



C. coesptosa

Vincent Brooks, imp



1.63



Maubert sel

Rees Lith.

Vincent Brooks imp

C. oligosperma

t. 64



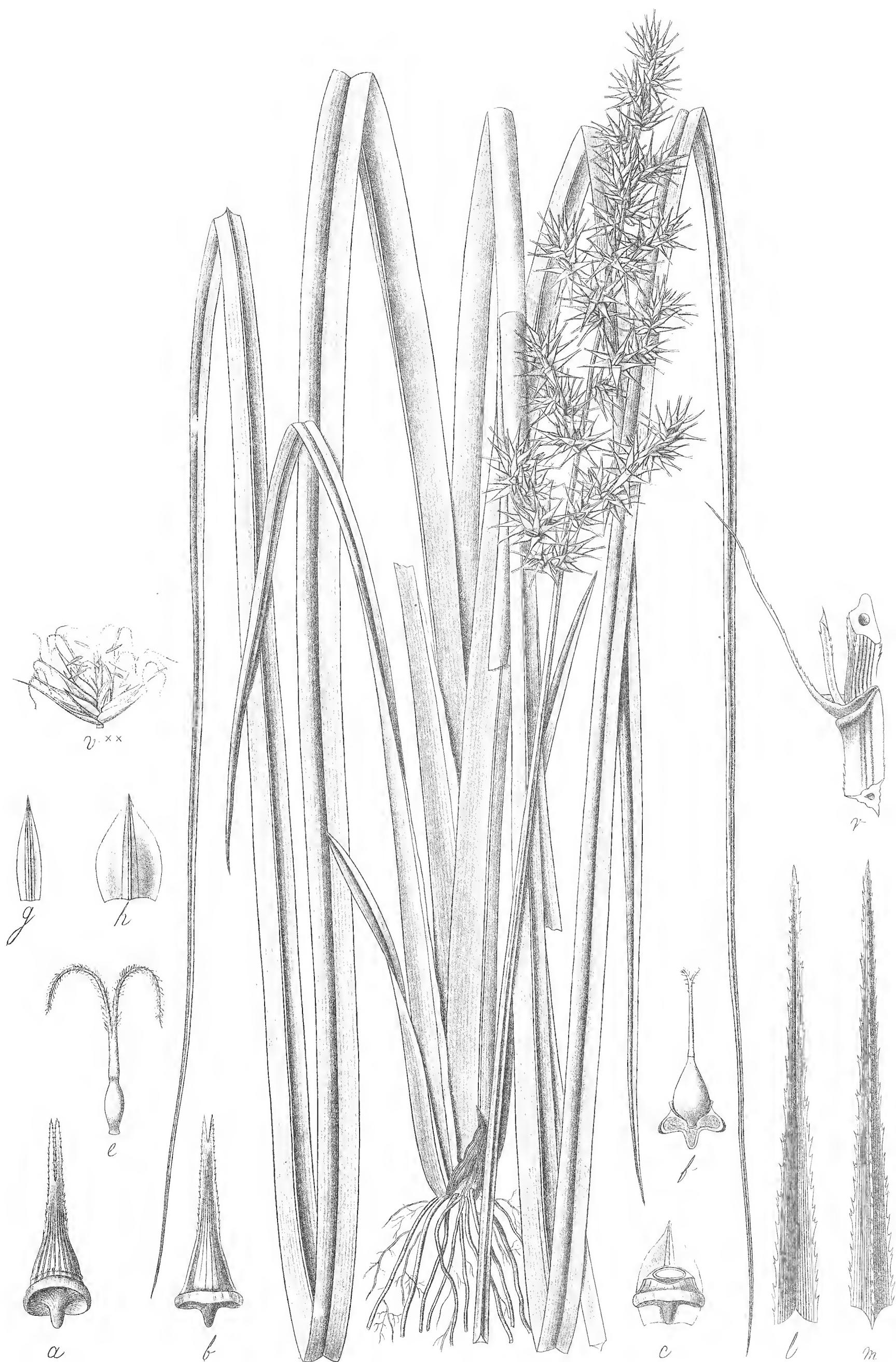
Maubert del

Rees Lith

Vincent Brooks imp

C. Raeana.



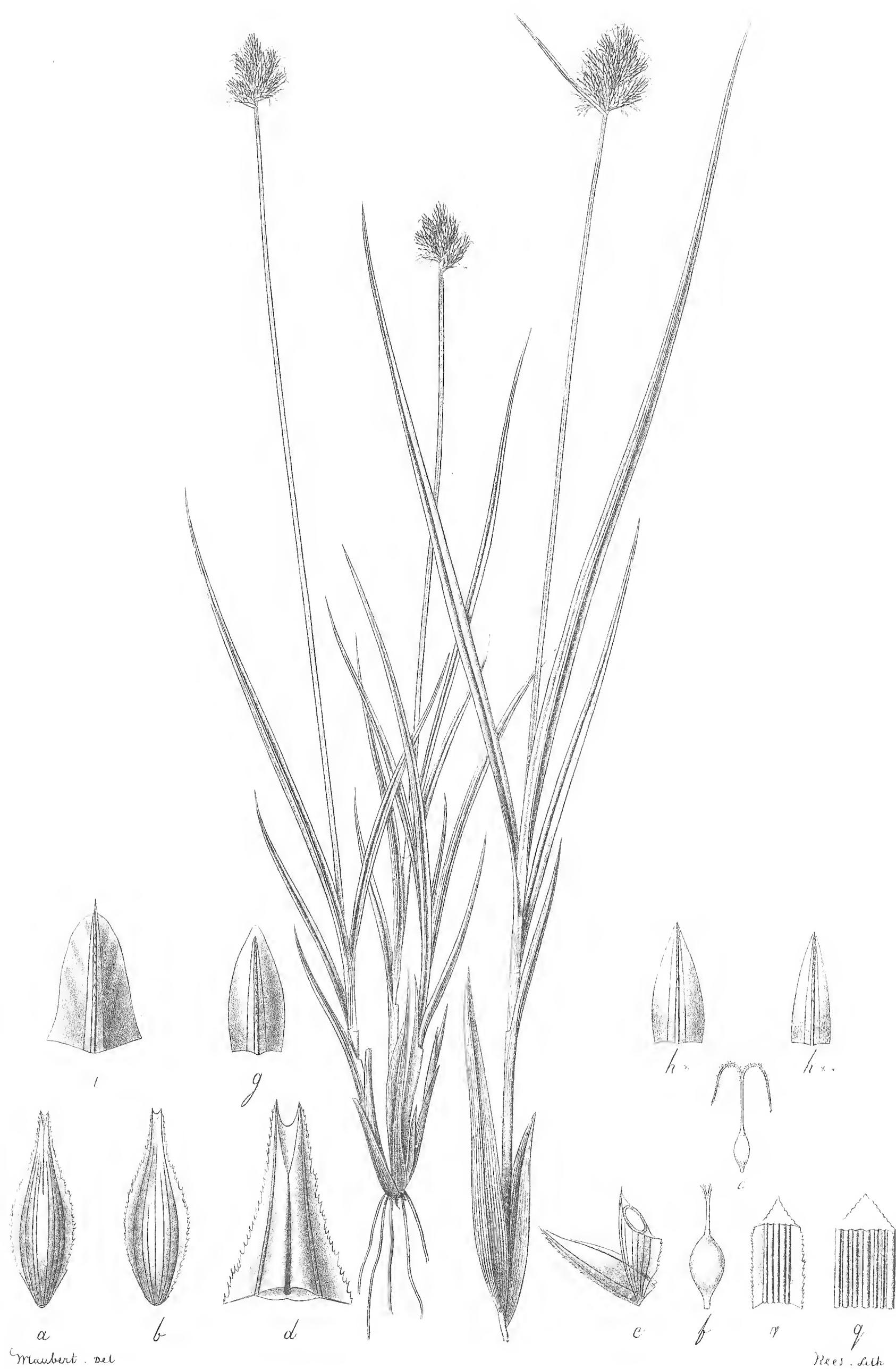


Mauribert. sel

Rees Lith

Vincent Brooks imp

C. crus-corvi



667

*C. Purdici*

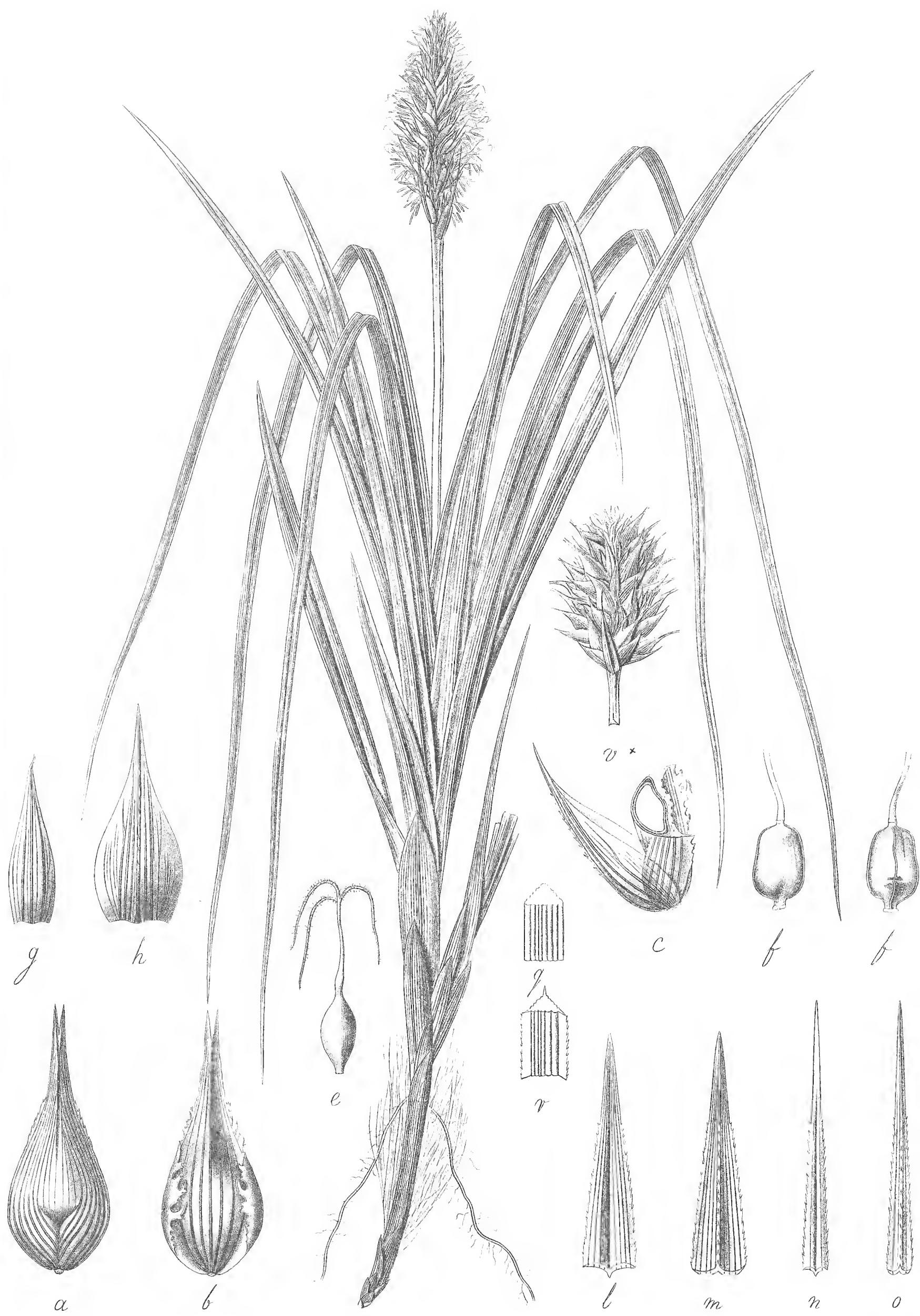
V. Brooks imp.

t. 68



C. alopecoidea

Vincent Brooks imp.



Maurand. s.l.

Rees Lith.

C. macrocephala.

Vivian Brooks imp.

t. 70



Graibert del

Kees. Lith.

Vincent Brooks imp.

C. Deweyana

t. 71.



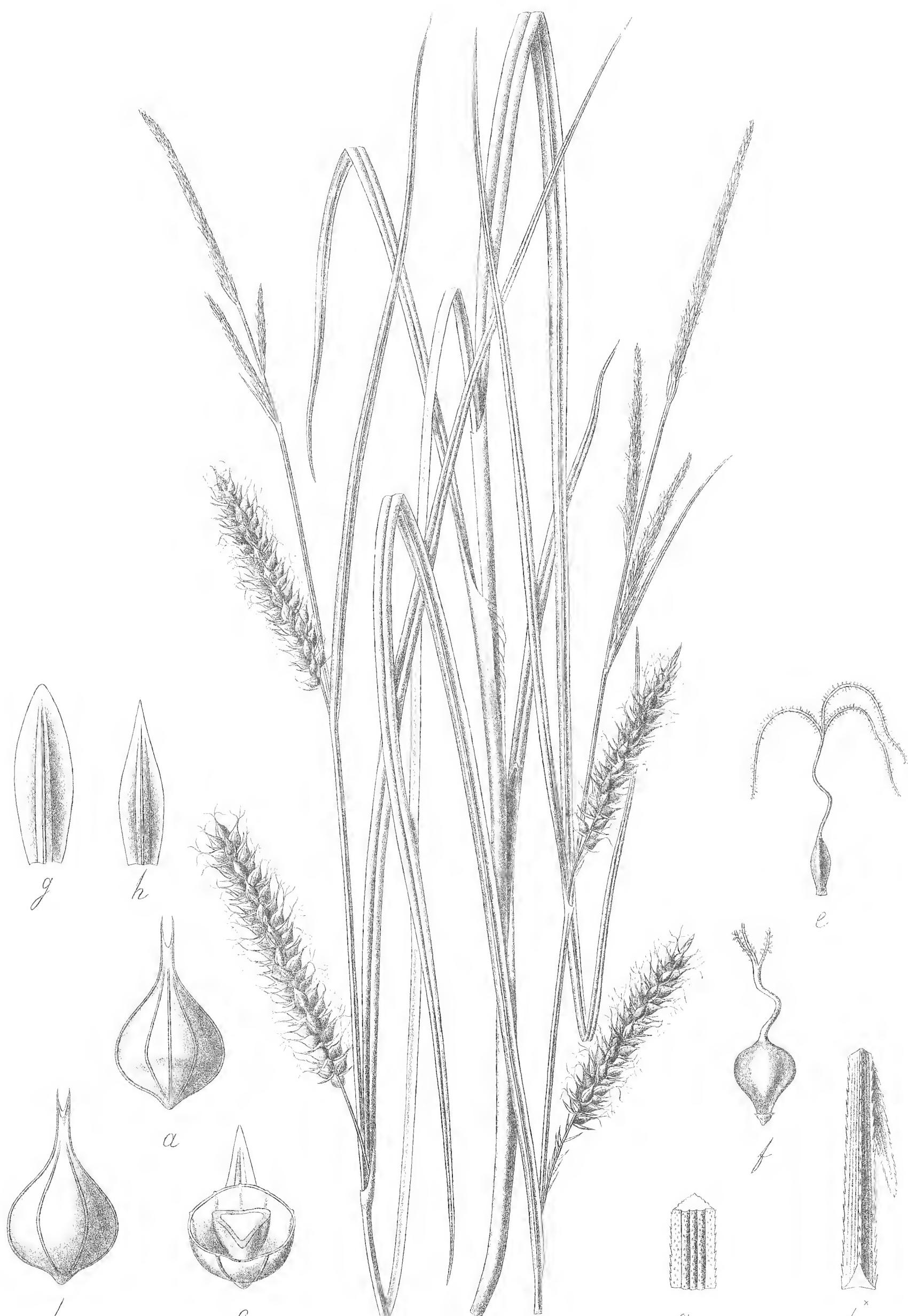
Maubert et Rees. del.

Rees lith.

C. Parryana.

Vincent Brooks imp.

t. 72.



Maurand del

Rees Sth

C. monile

Vincent Brooks imp

6.73



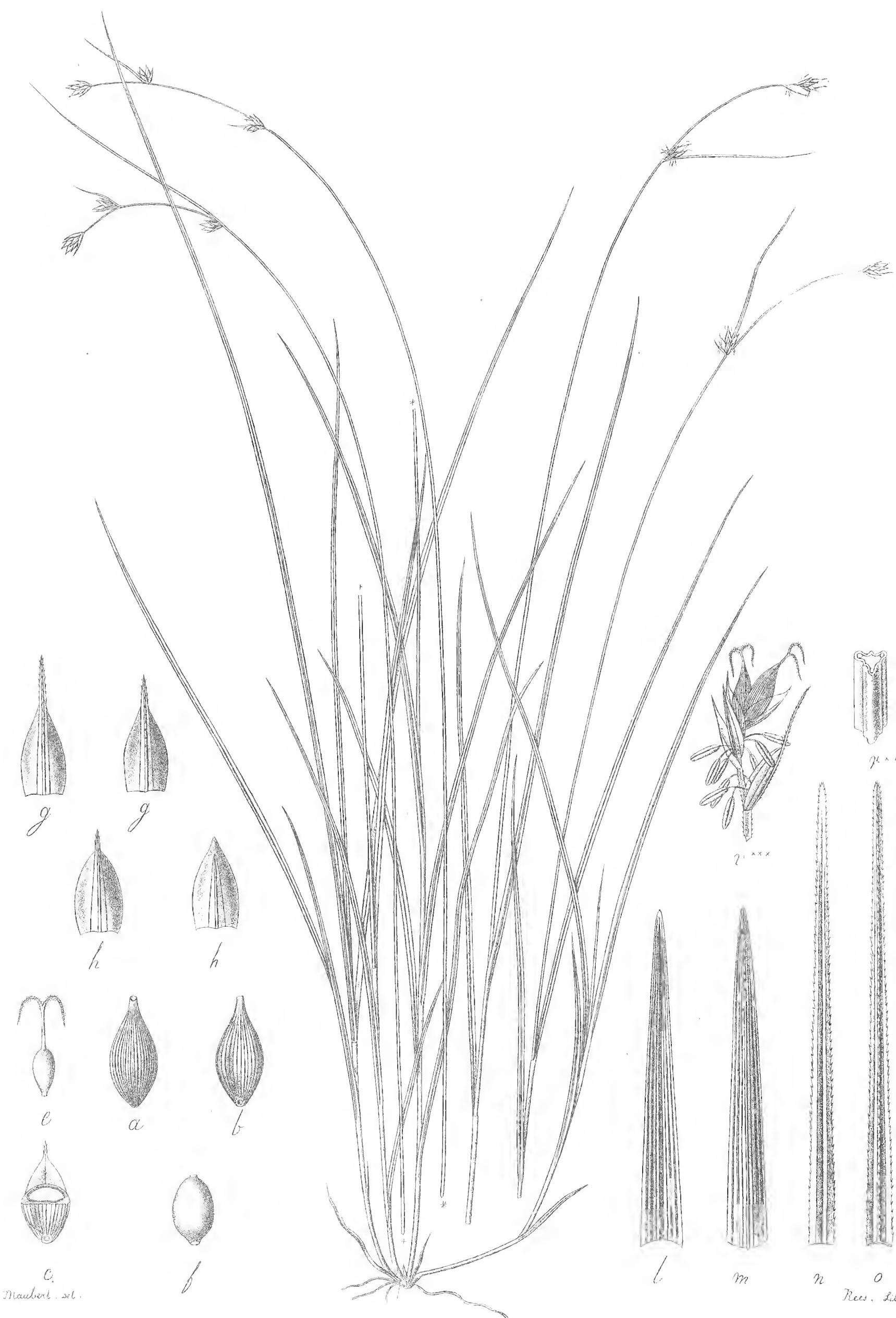
Maubert. del.

Rees Lith.

C. vivescens

Vincent Brooks imp.

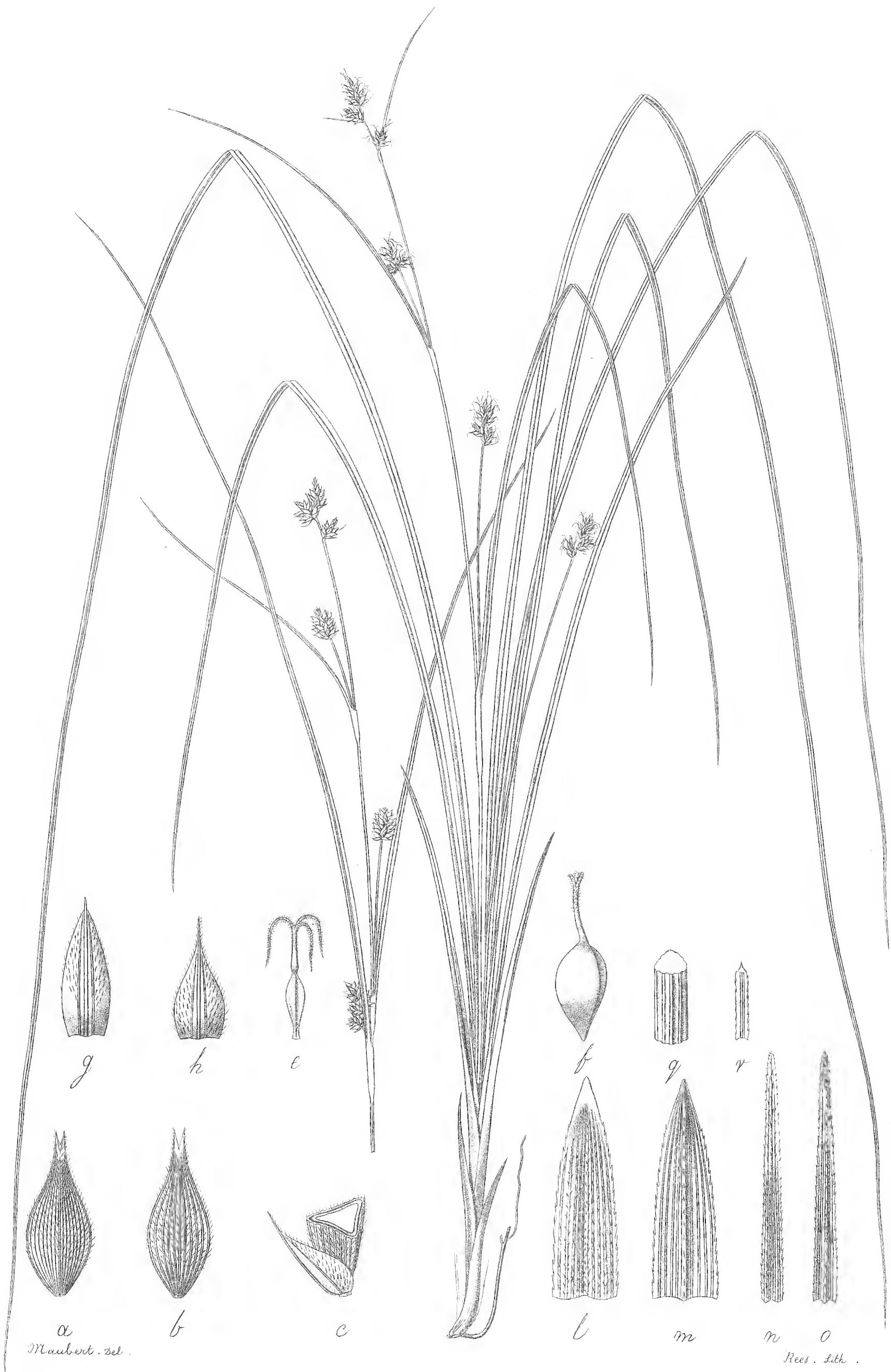
6.74



C. trisperma.



t. 75.



C. scabrella.

Vincent Doornenhu

t. 76



C. aurea.

Vincent Brooks imp.

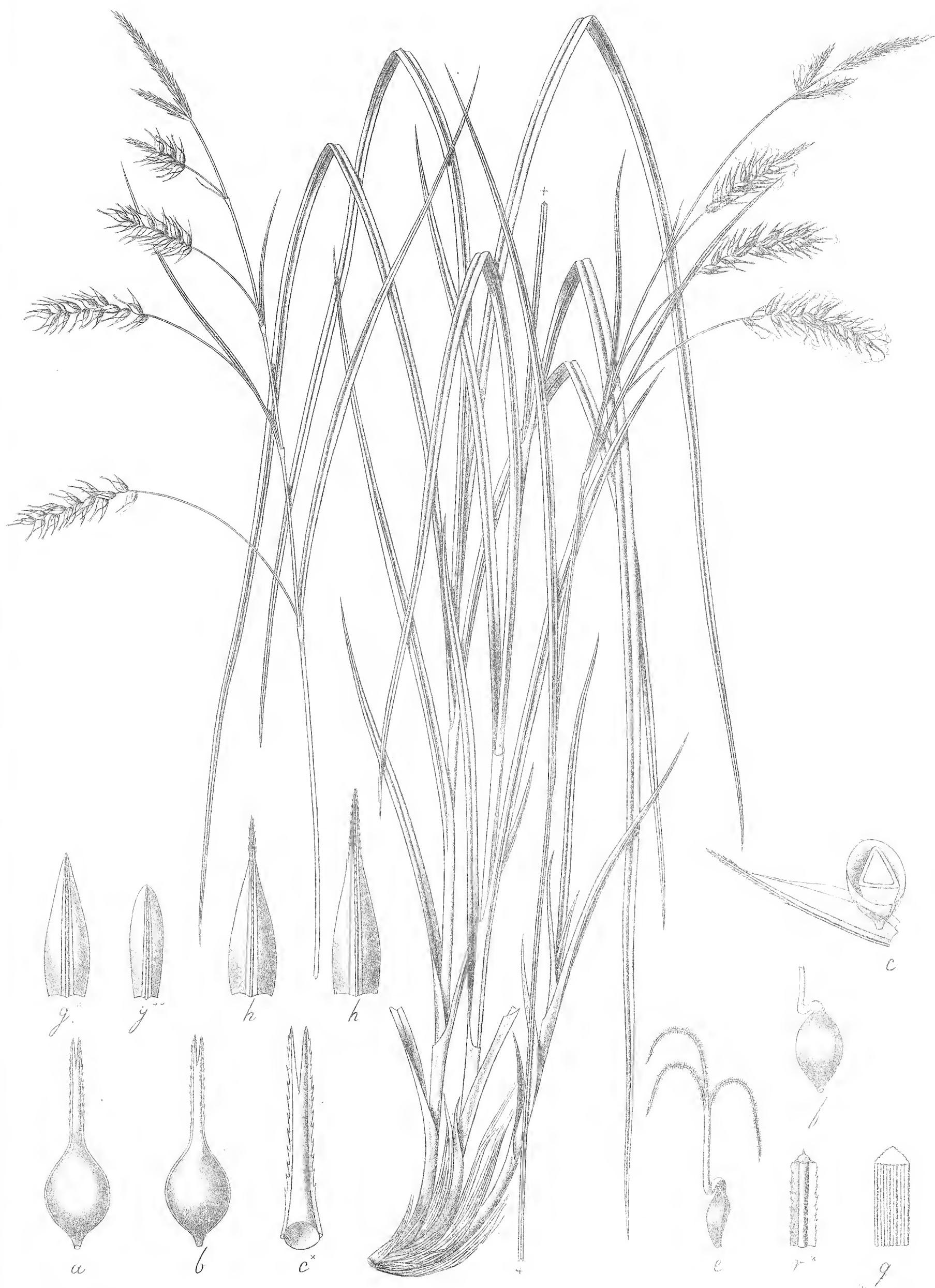
t. 77



C. lenticularis.

Vincent Brooks imp

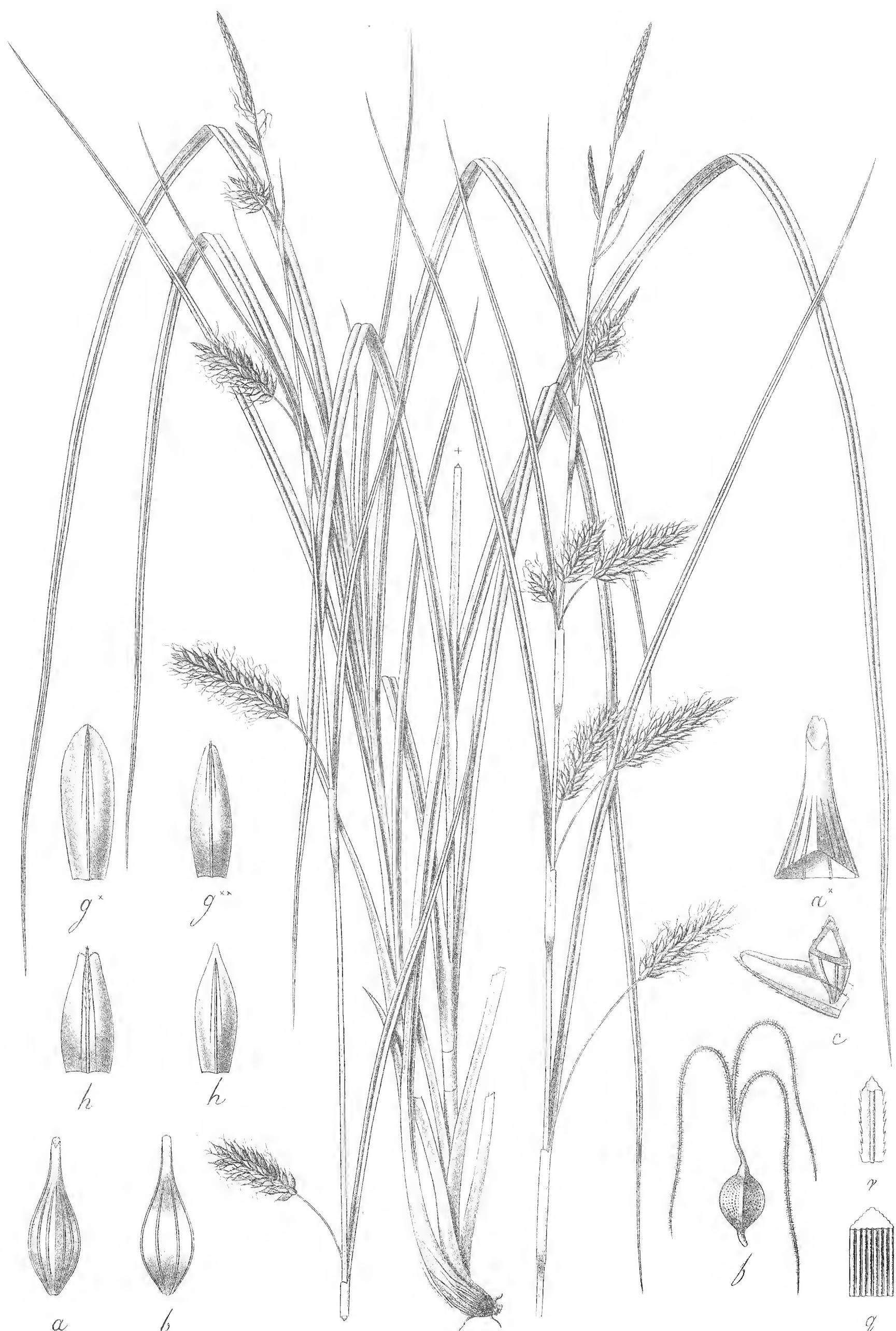
l. 78



C. longirostris.

Ancient Time Sea-Map

t. 79.

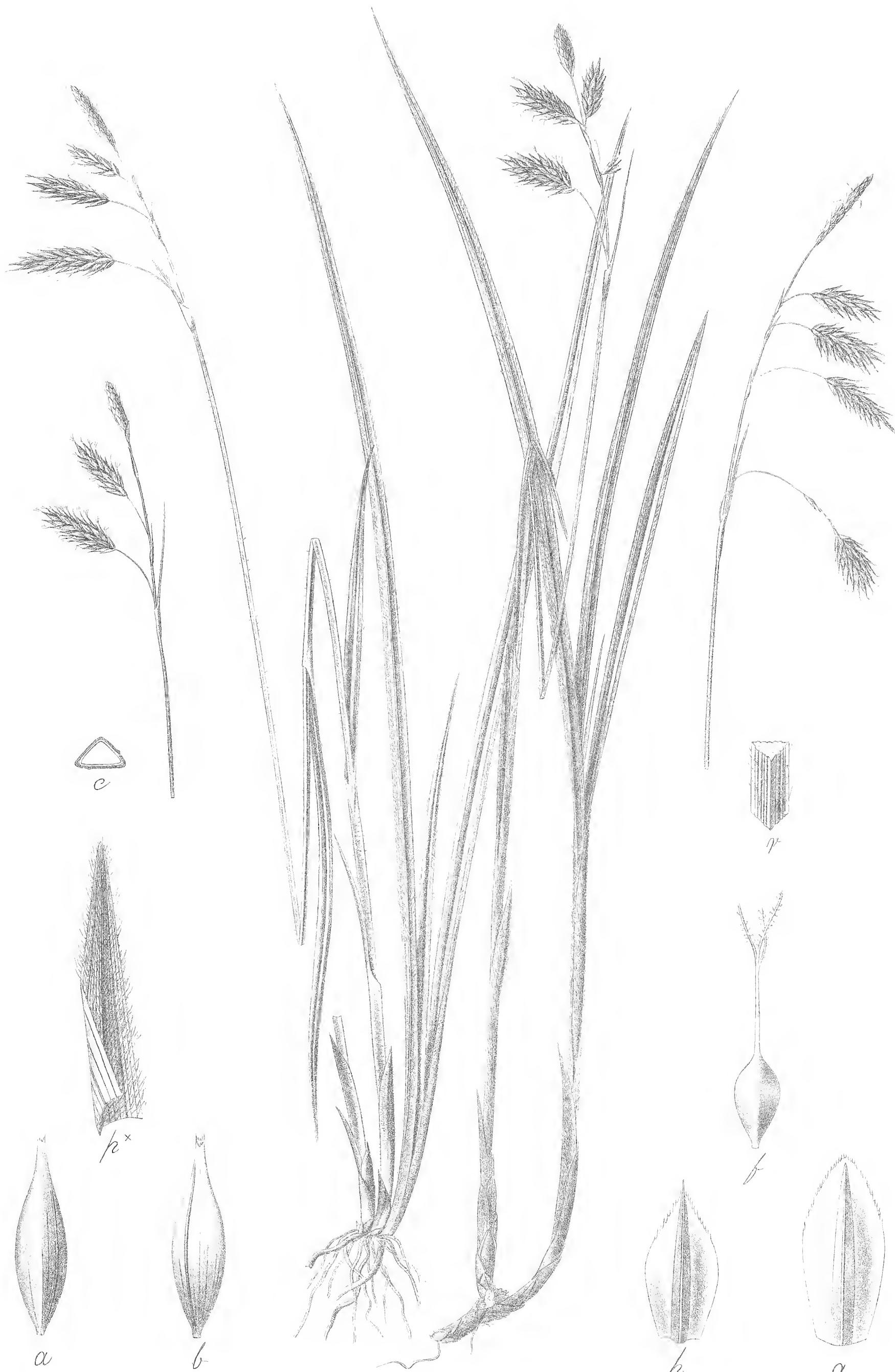


Moubré, sol.

Rees. Sull.

C. Cheyenneensis

6.80.



Graubed et Rees del

Rees Lith

C. flexilis.



Mouquet et Rees. del.

Rees. Lith.

C. Cravei.

6. 82.



C. conoidea.



Maubert et Rees. Del

Rees. Lith.

C. Meadii.

C. Ph.



Maubert. del.

Kees. Luth.

C. tetanica.

*C. granularis.*

T. 86.



Maubert. sel.

C. grisea.



Maubert. del.

Reed. Lith.

C. grisea. var.



Maubert del.

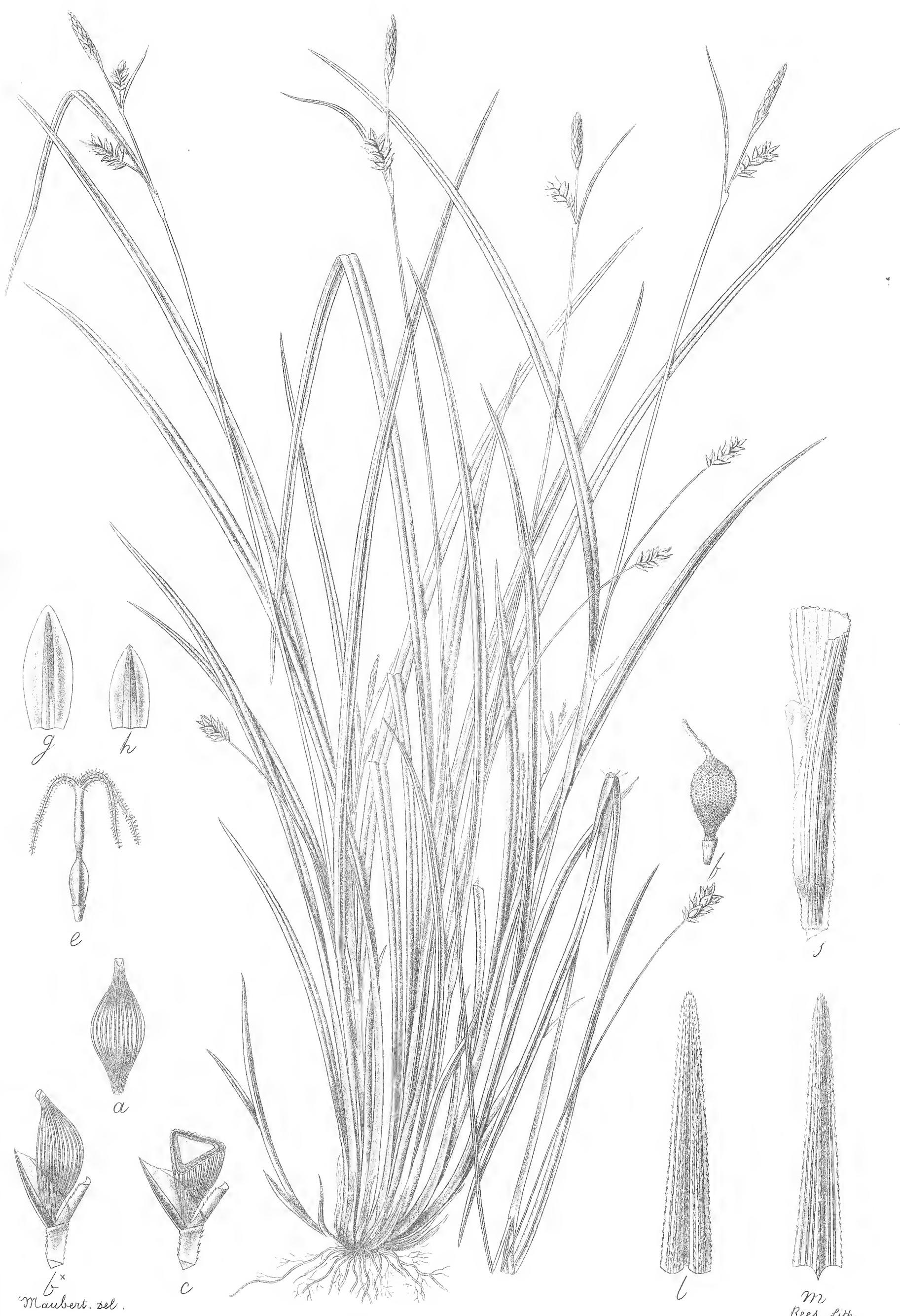
Rees. Lith.

C. flaccosperma.



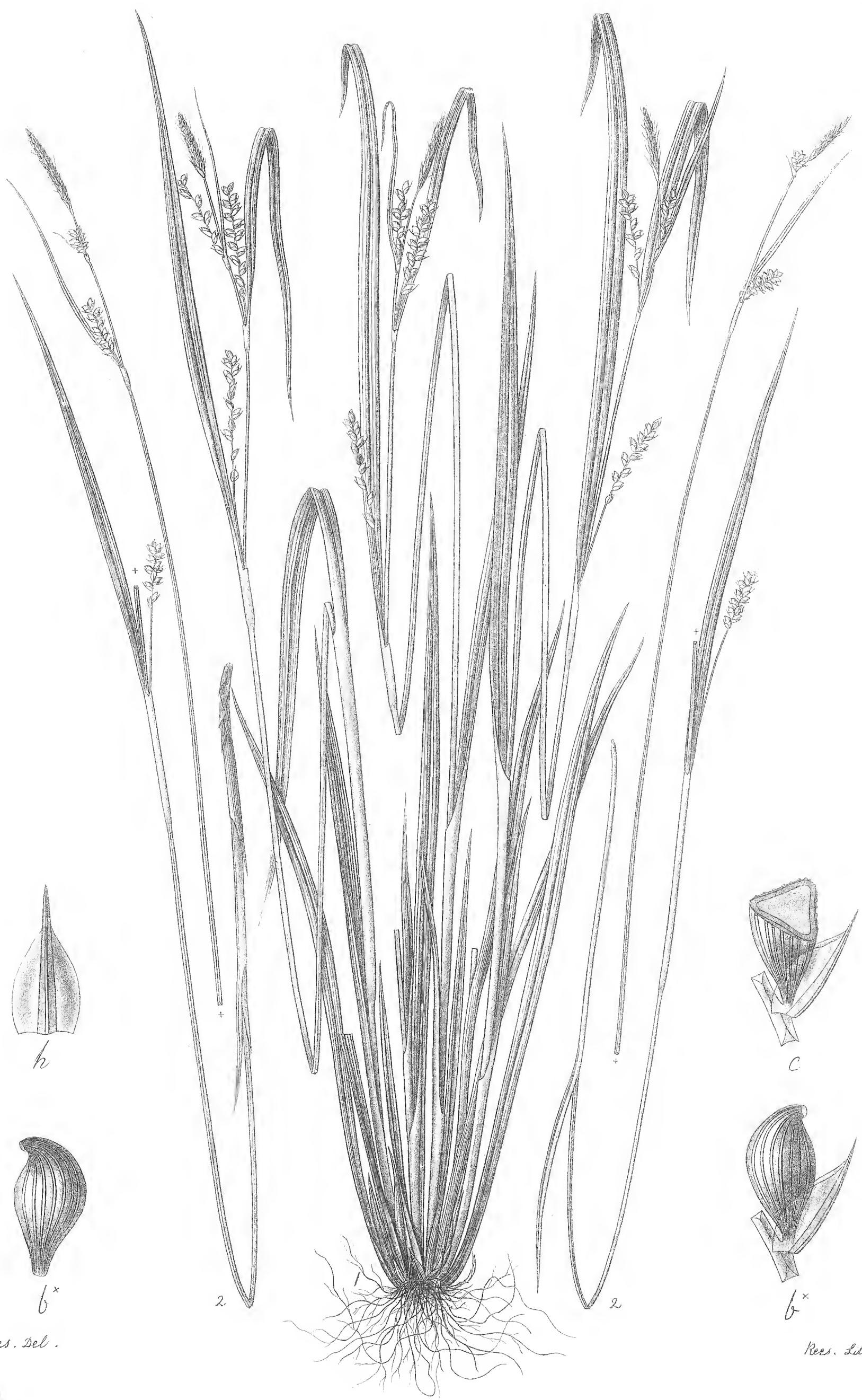
C. LAXIFLORA.

T. y. 2.

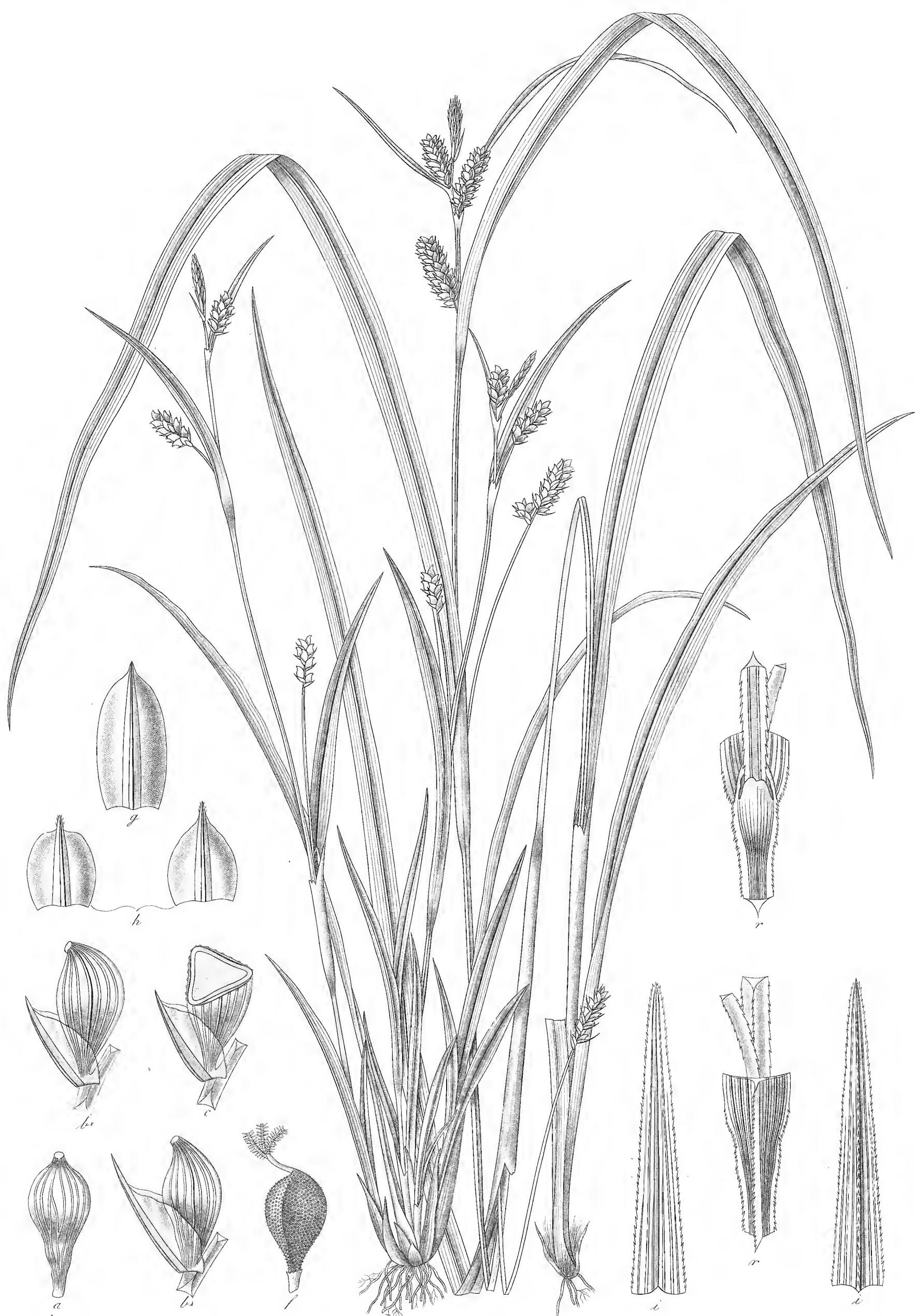


C. laxiflora var. *styloflexa*.

t. 91.



C. laxiflora 1. var. *intermedia*.
2. *gracillima*.



C. LAXIFLORA.

var. BLANDA, 1 & 2.



C. LAXIFLORA.

var. LATIFOLIA.

t. 24



C P L A N T A G I N E A .

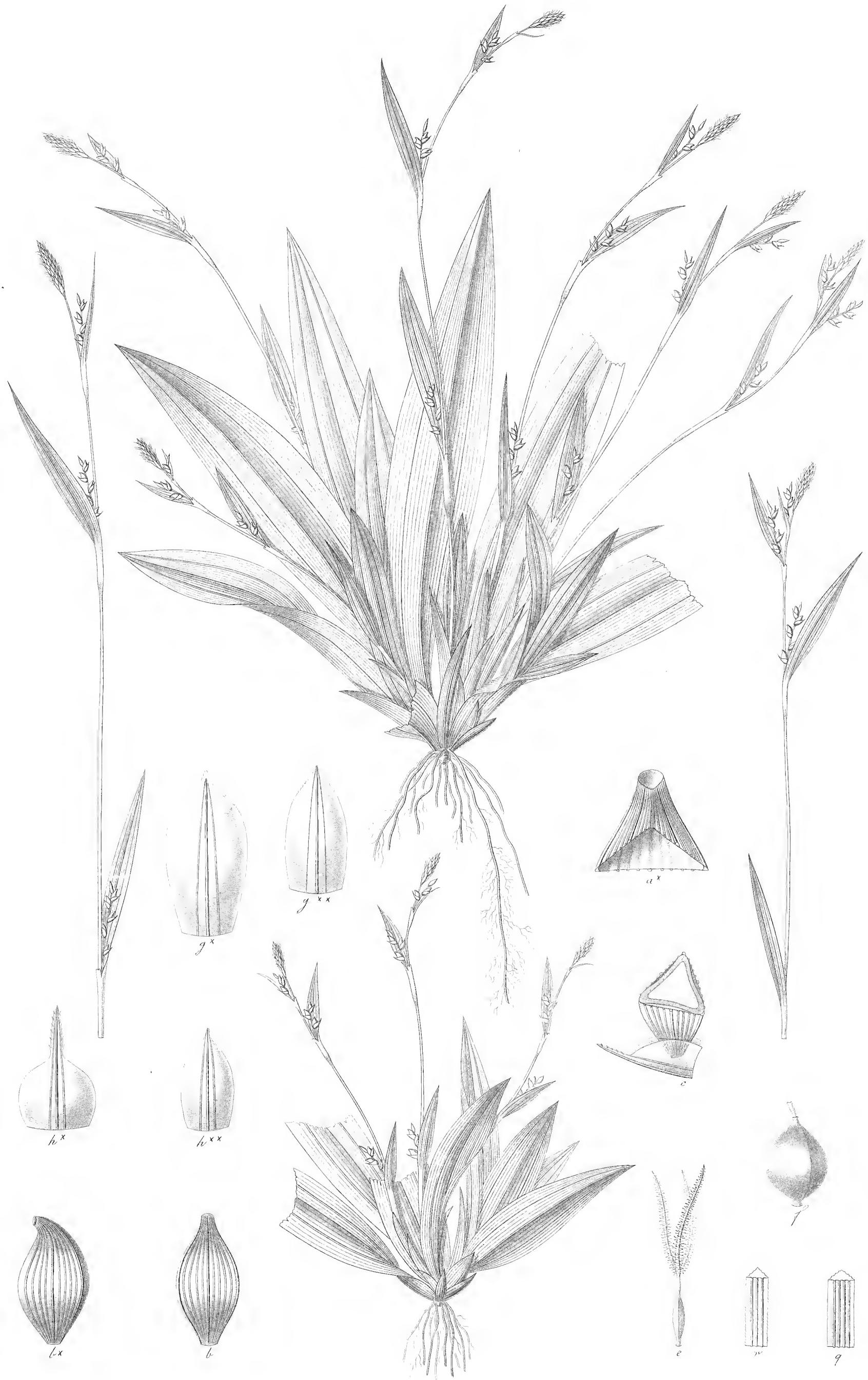
M.

c.



C. CAREXANA.

*M**Coufré Sc.*



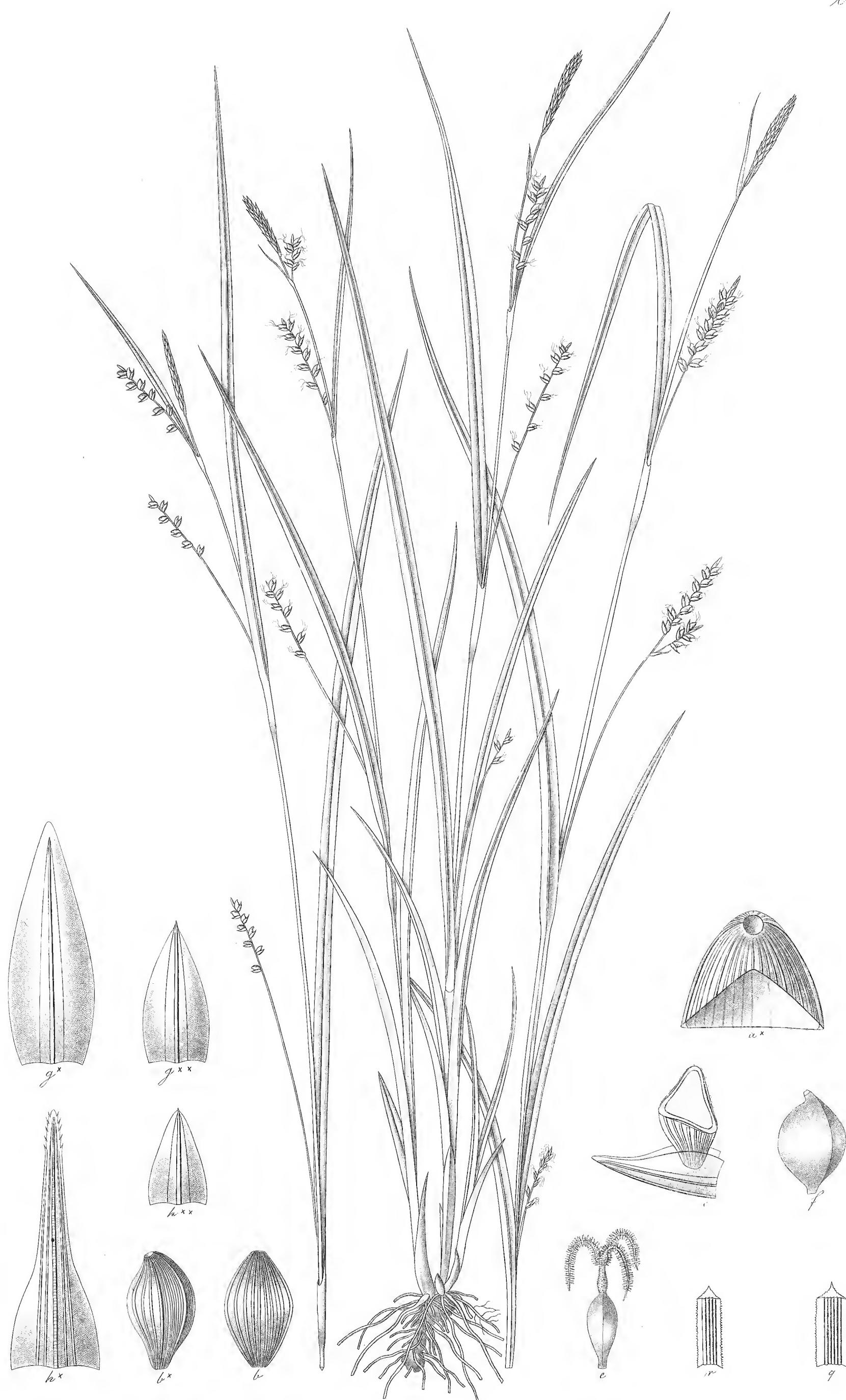
C. PLATYPHYLLA.

*M.**P.*



C. RETROCURVA.

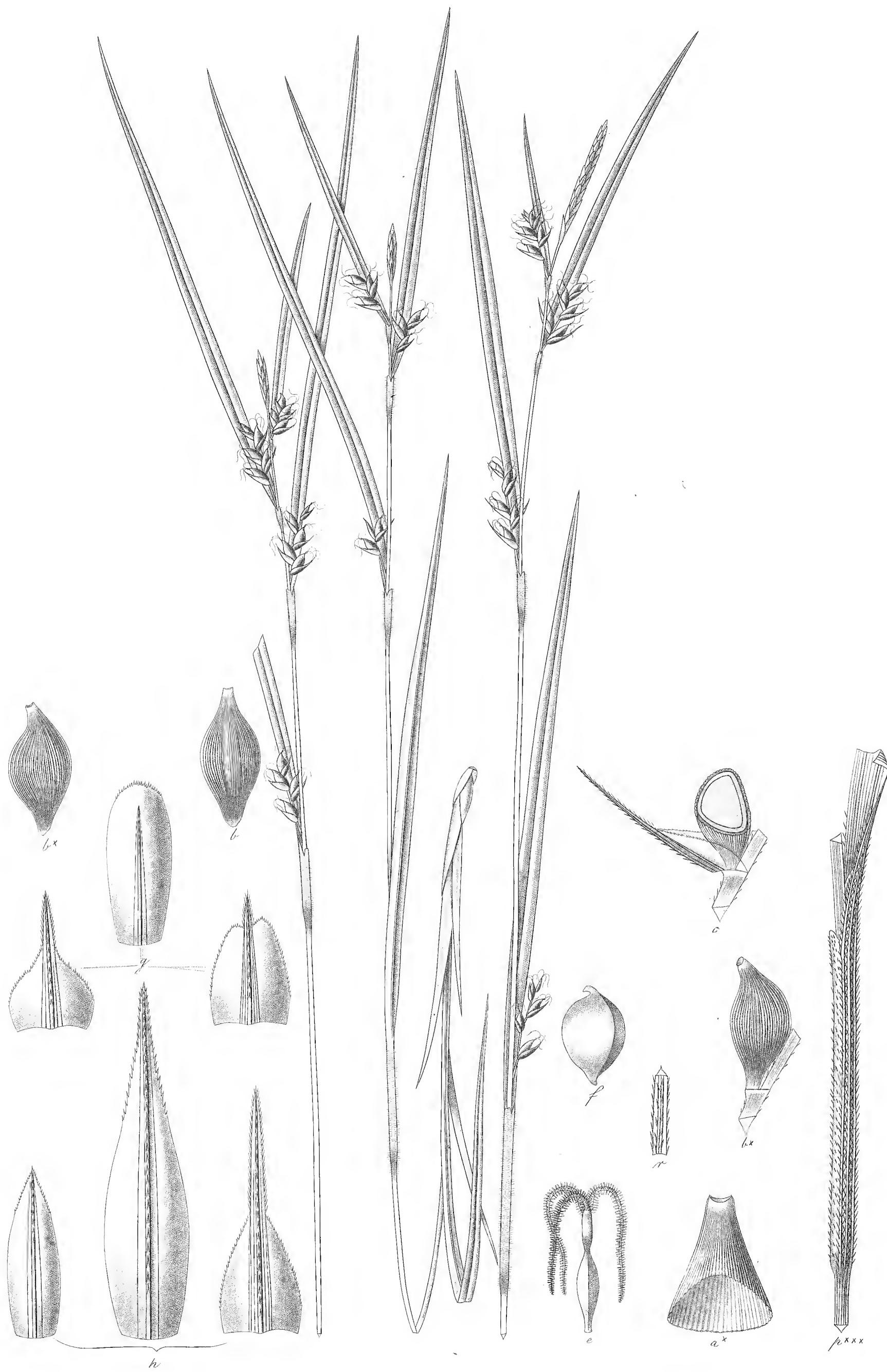
*M.**c.*



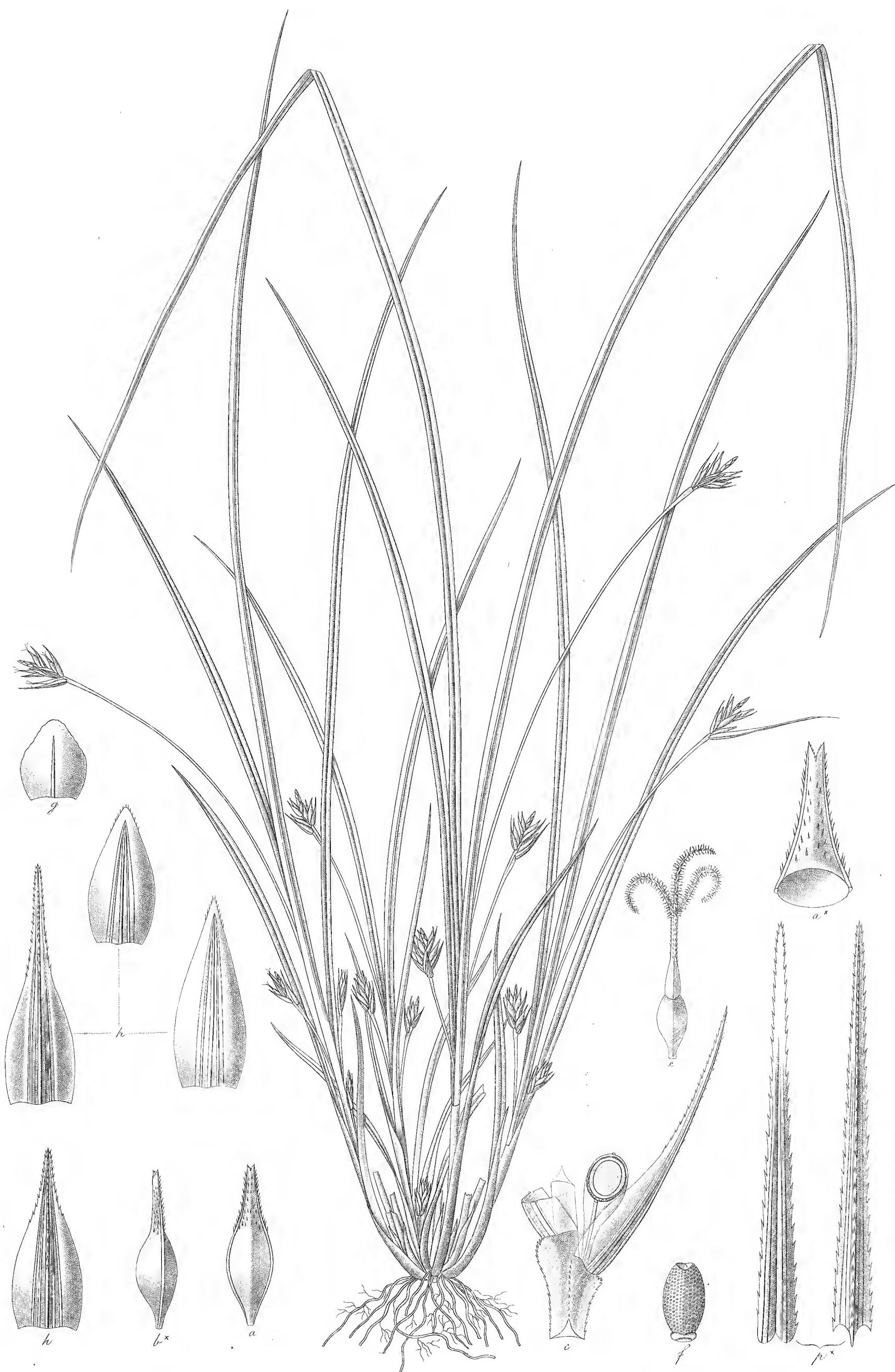


C. O L I G O C A R P A.

t. 100.



C. HITCHCOCKIANA.

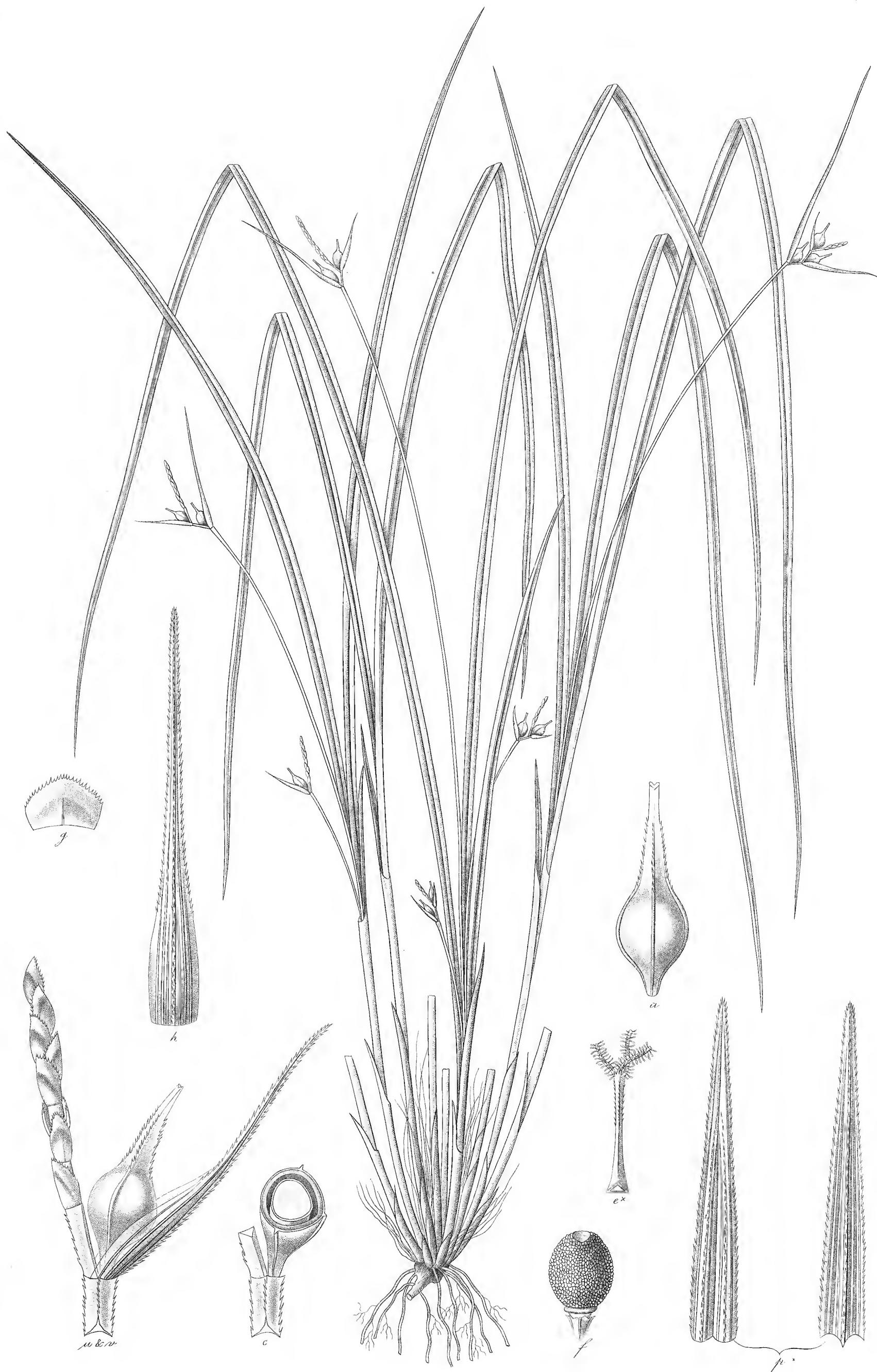


C. WILLDENOWII.

t. 102.



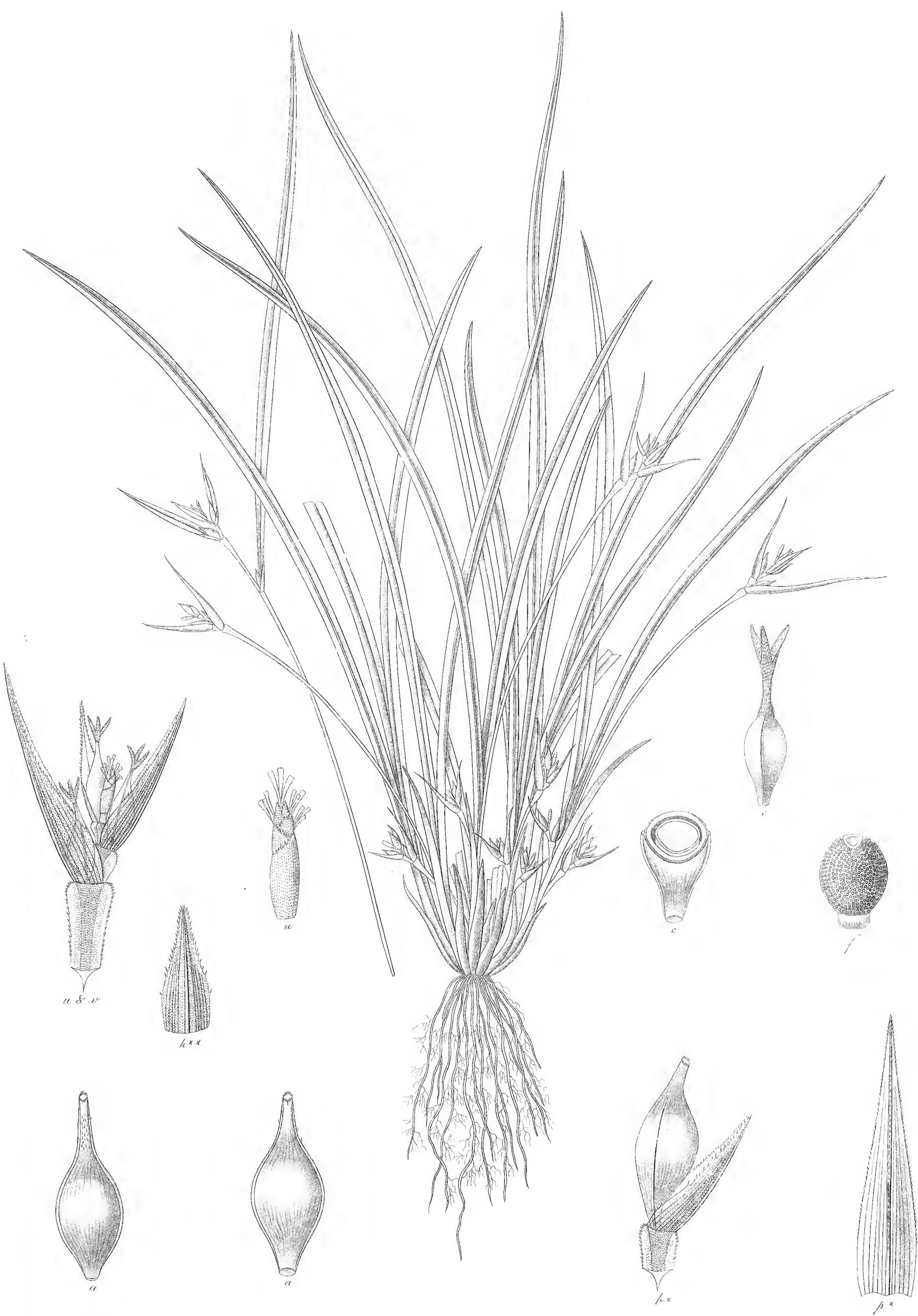
C. WILLDENOWII.



C. STEUDELLI.

M.

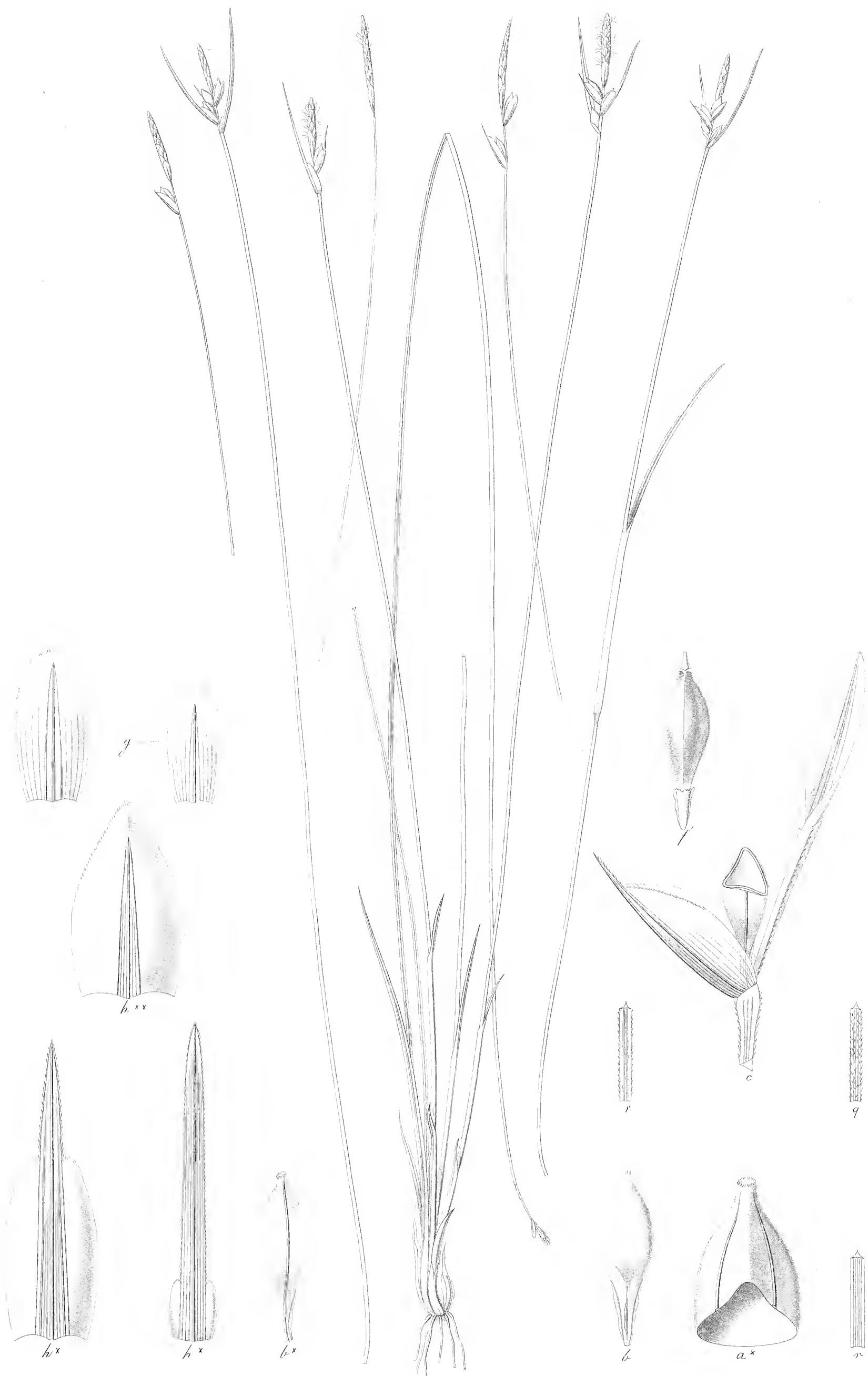
c.



M.

C. B. A. C. K. II.

c.



C. GEYERI.





O. PHYLLOSTACHYS.

*M.**P.*

t. 107.



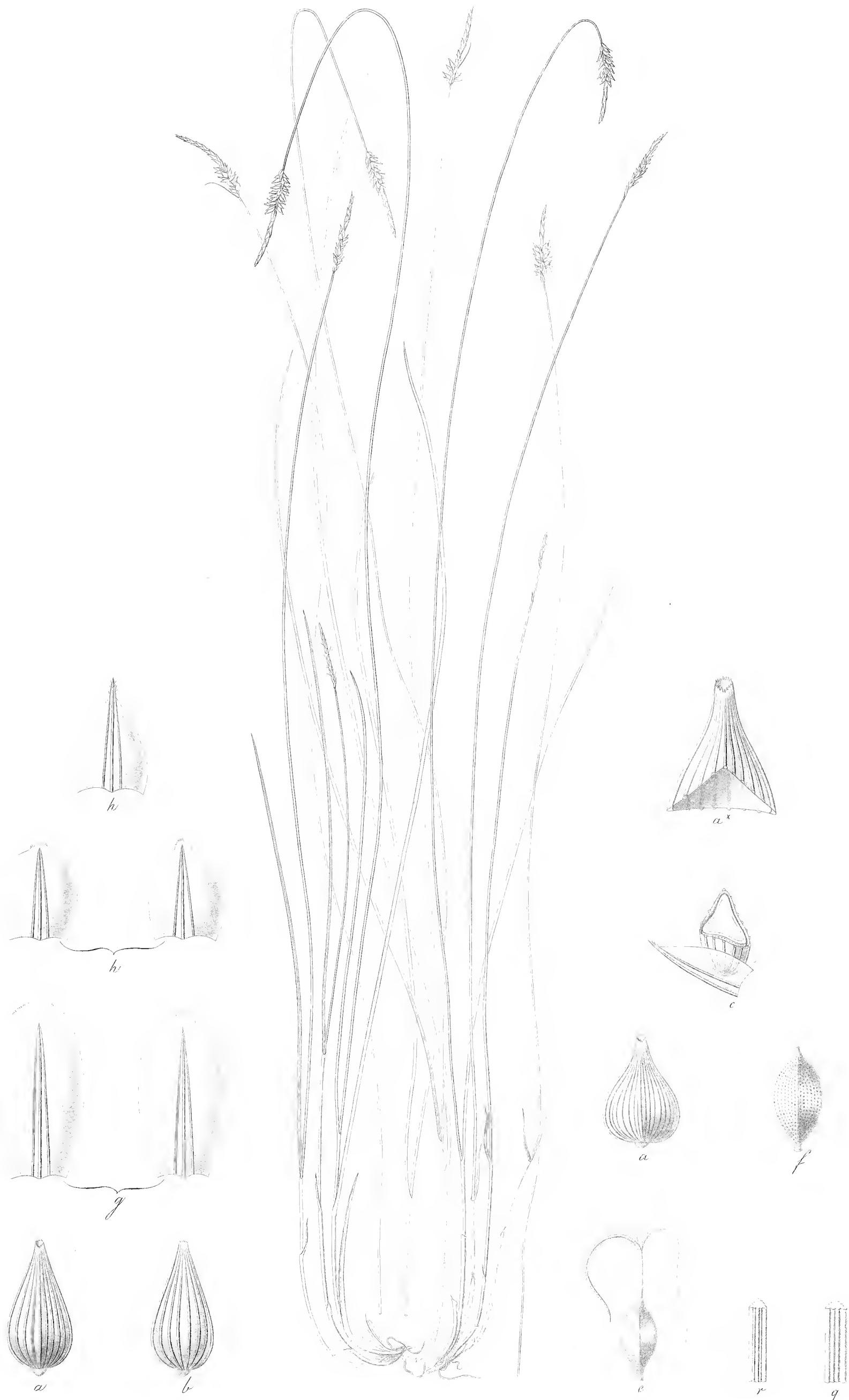
Maubert et Rees. del

Rees. Lith.

C. concinna.



C. SPACHIANA





C. C A P I L L A C E A.

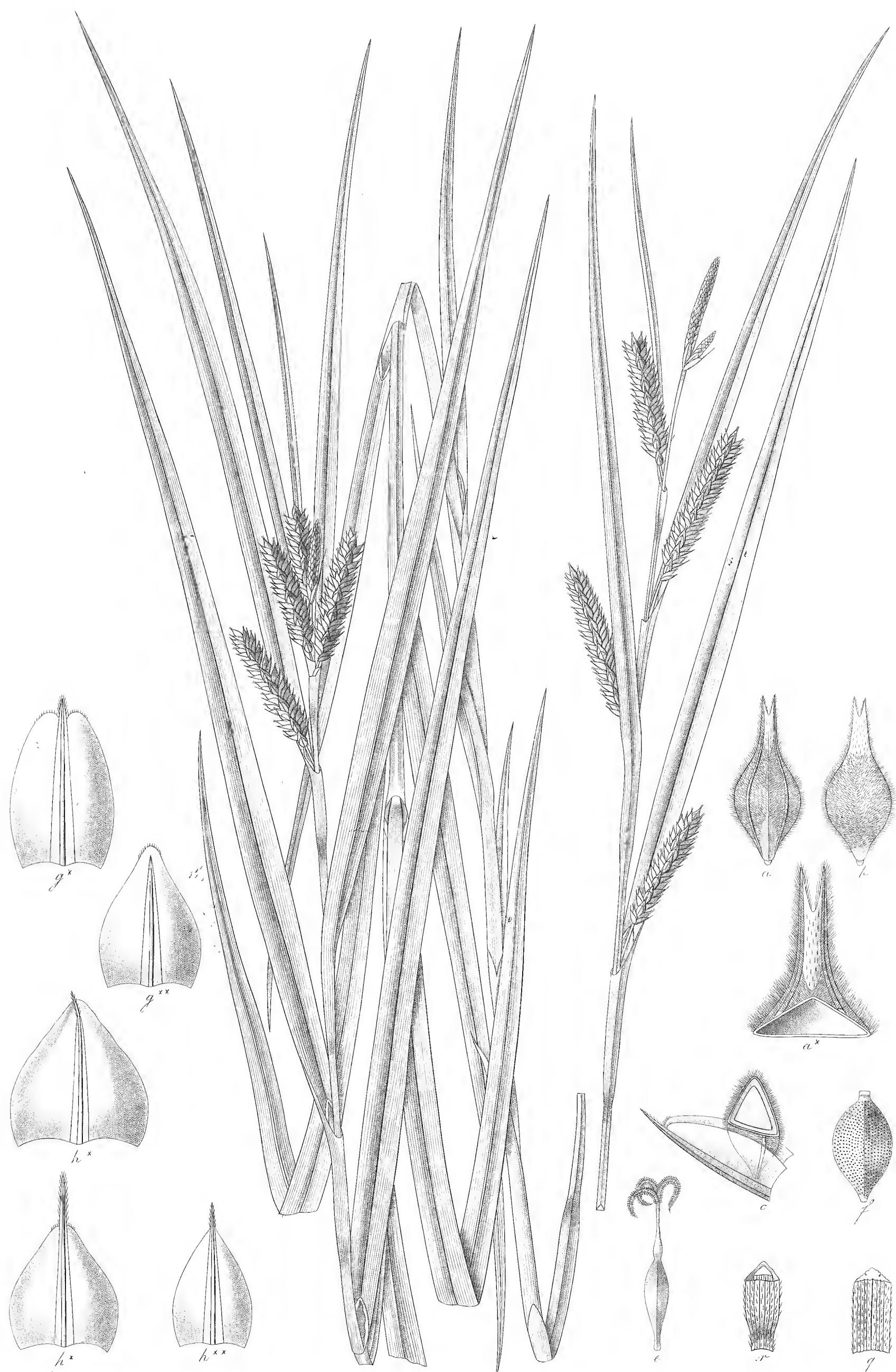


C. FUSIFORMIS.



C. FINITIMA.

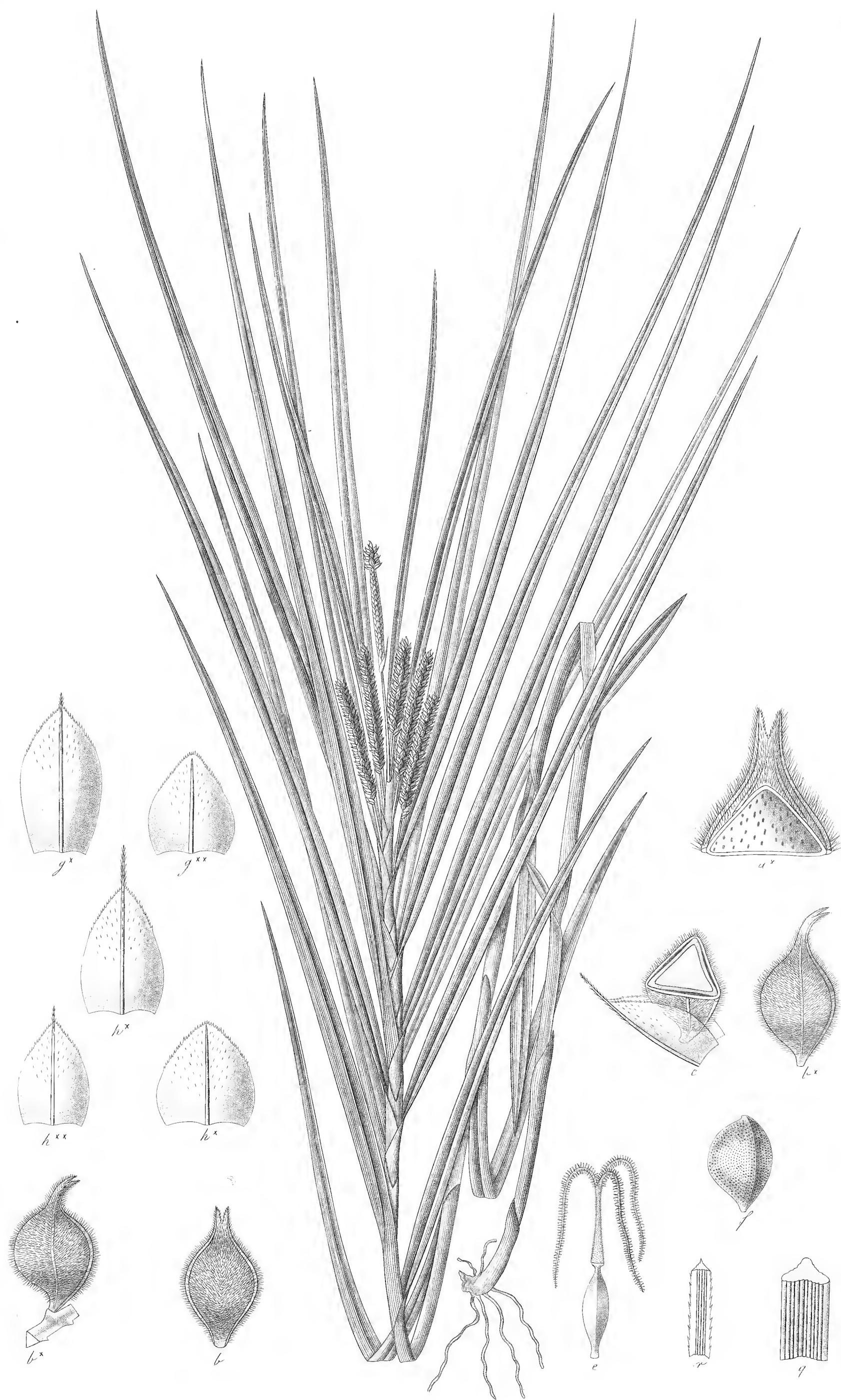
*M.**P.*



C. LIGULATA.

M

c

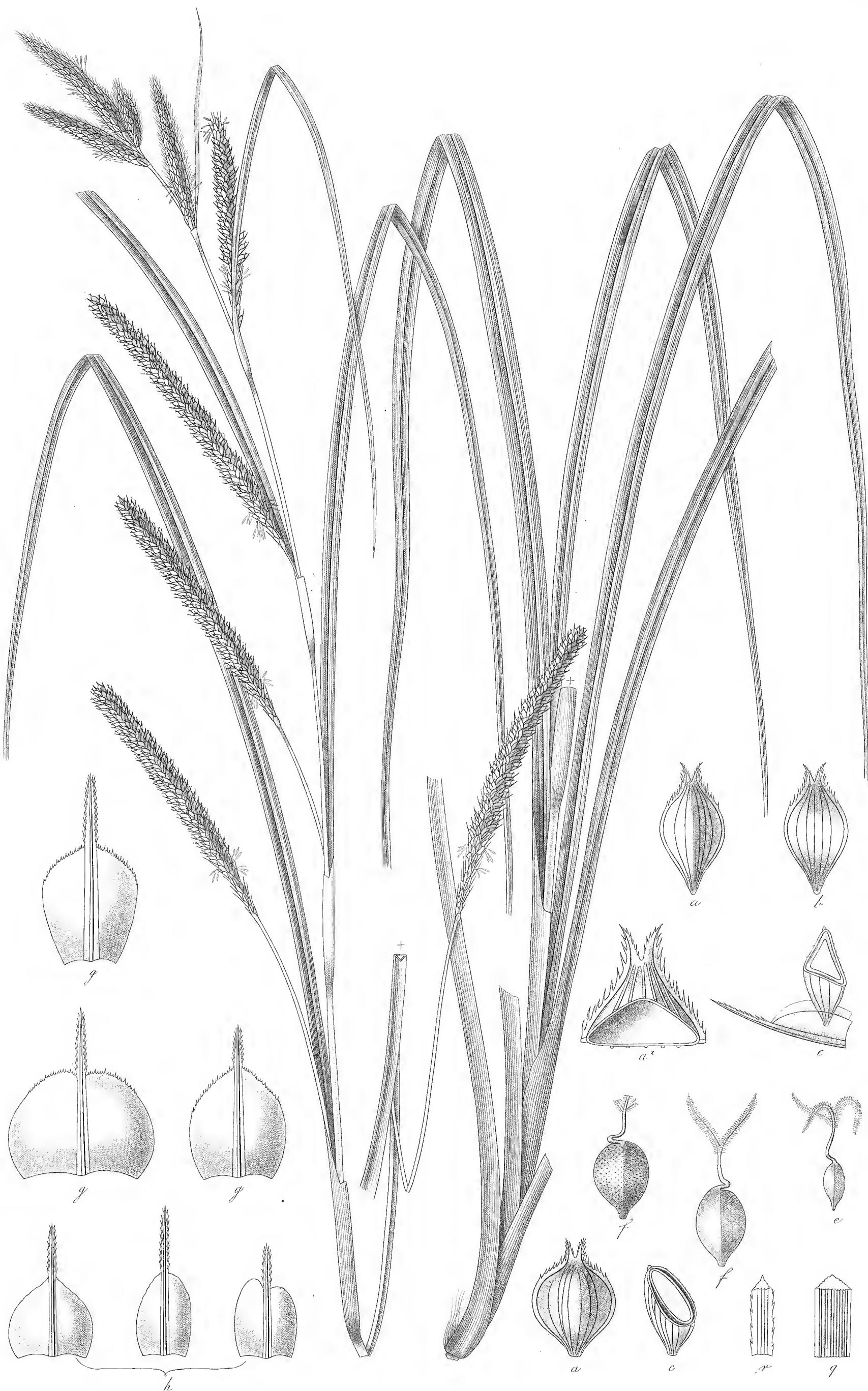


C. MAUBERTIANA.



C. PRESCOTTIANA.



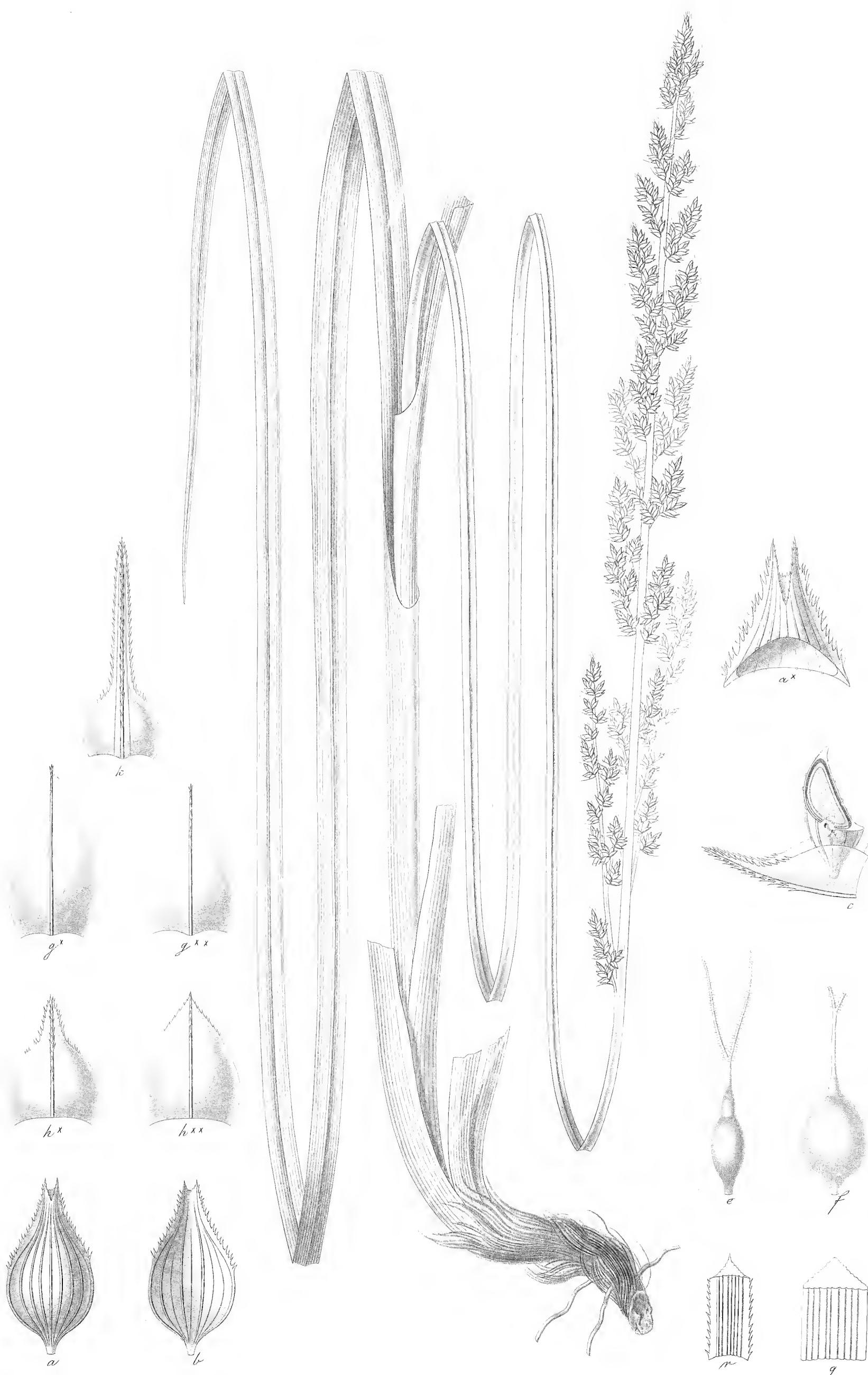


C. PALEATA.



C. sororina





C. APPRESSA.

*M.**P.*

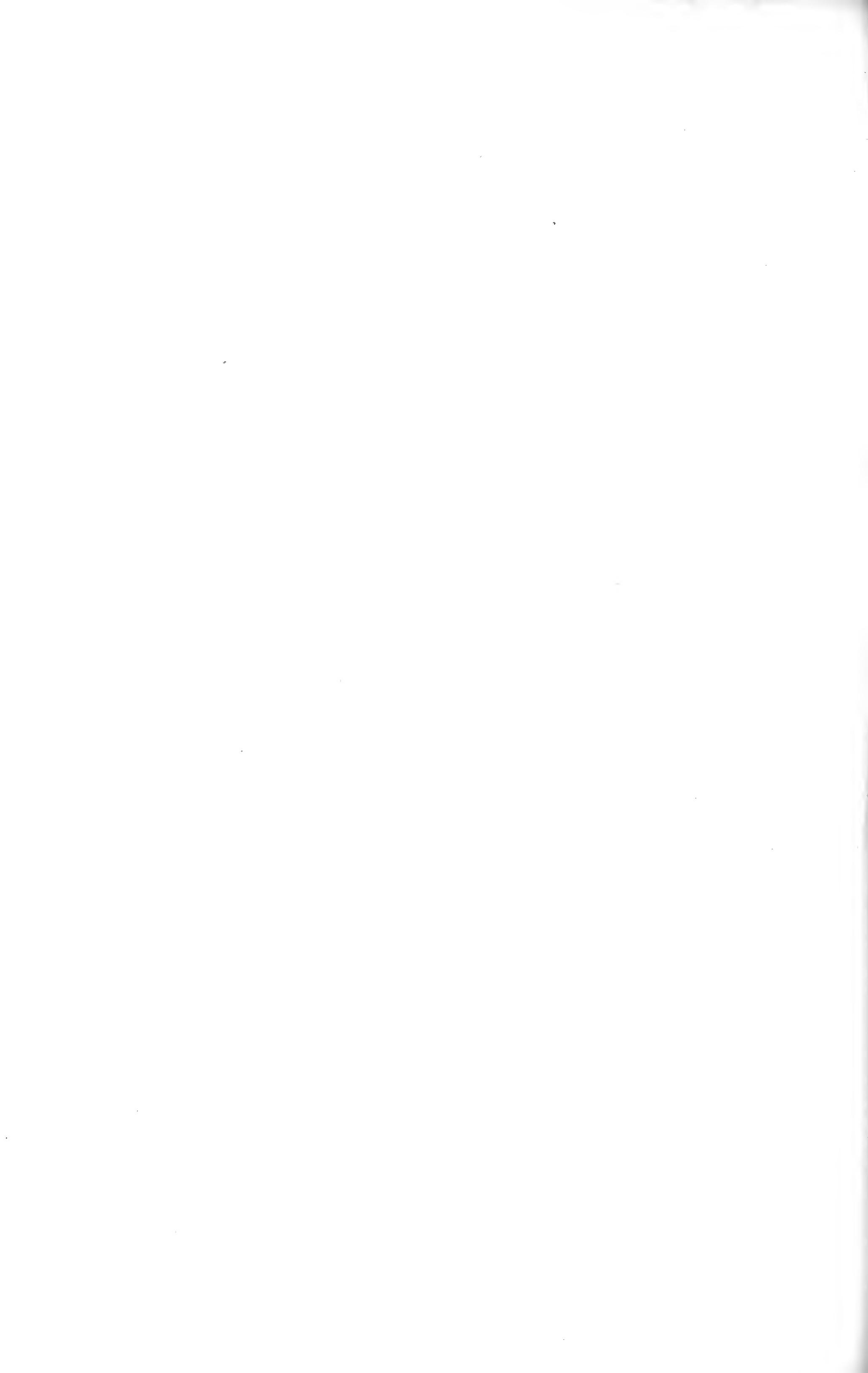
t. 120.

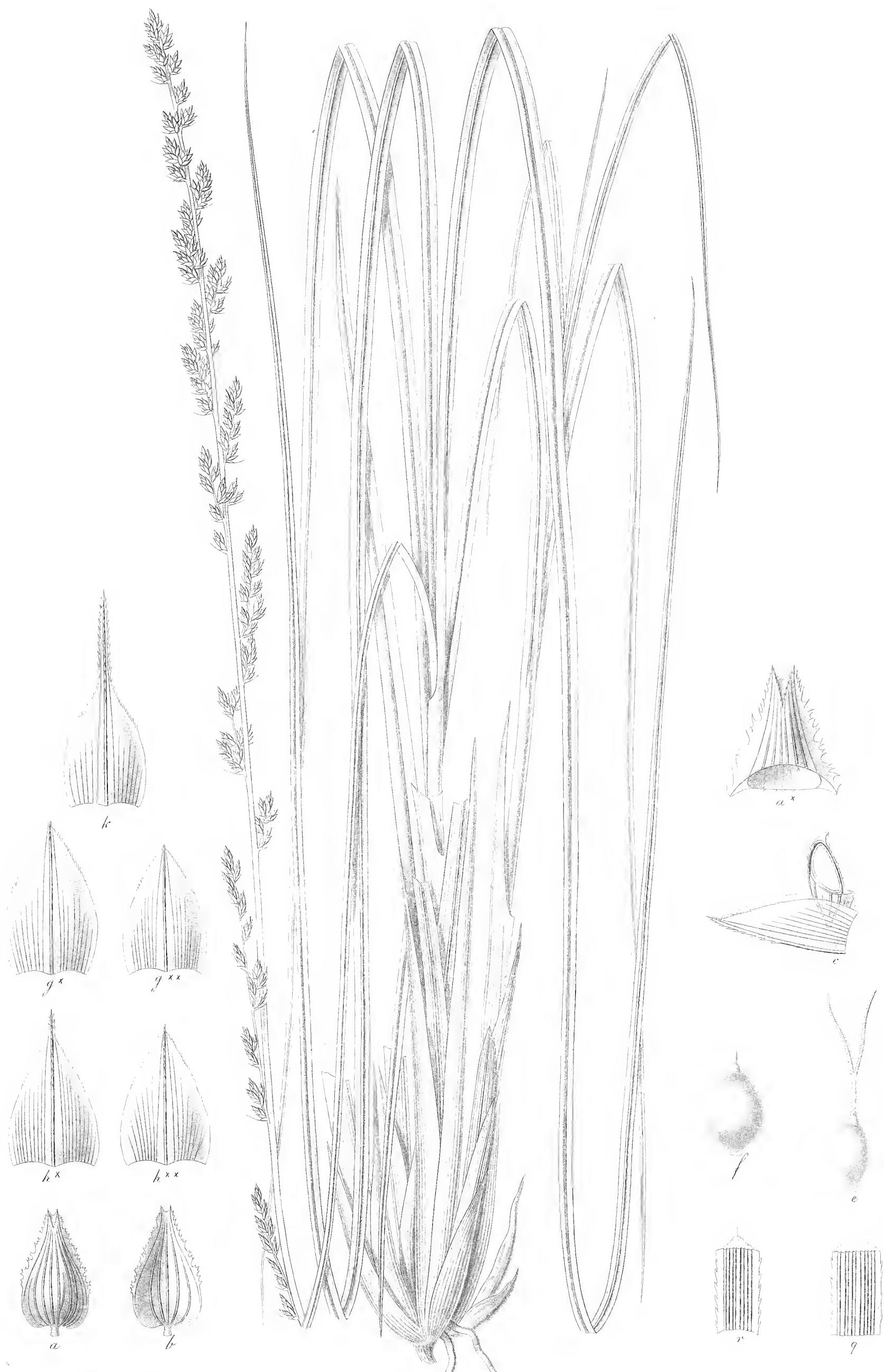


Nees. del.

Nees. lith.

C. appressa.





C. V I R G A T A.

*M.**P.*

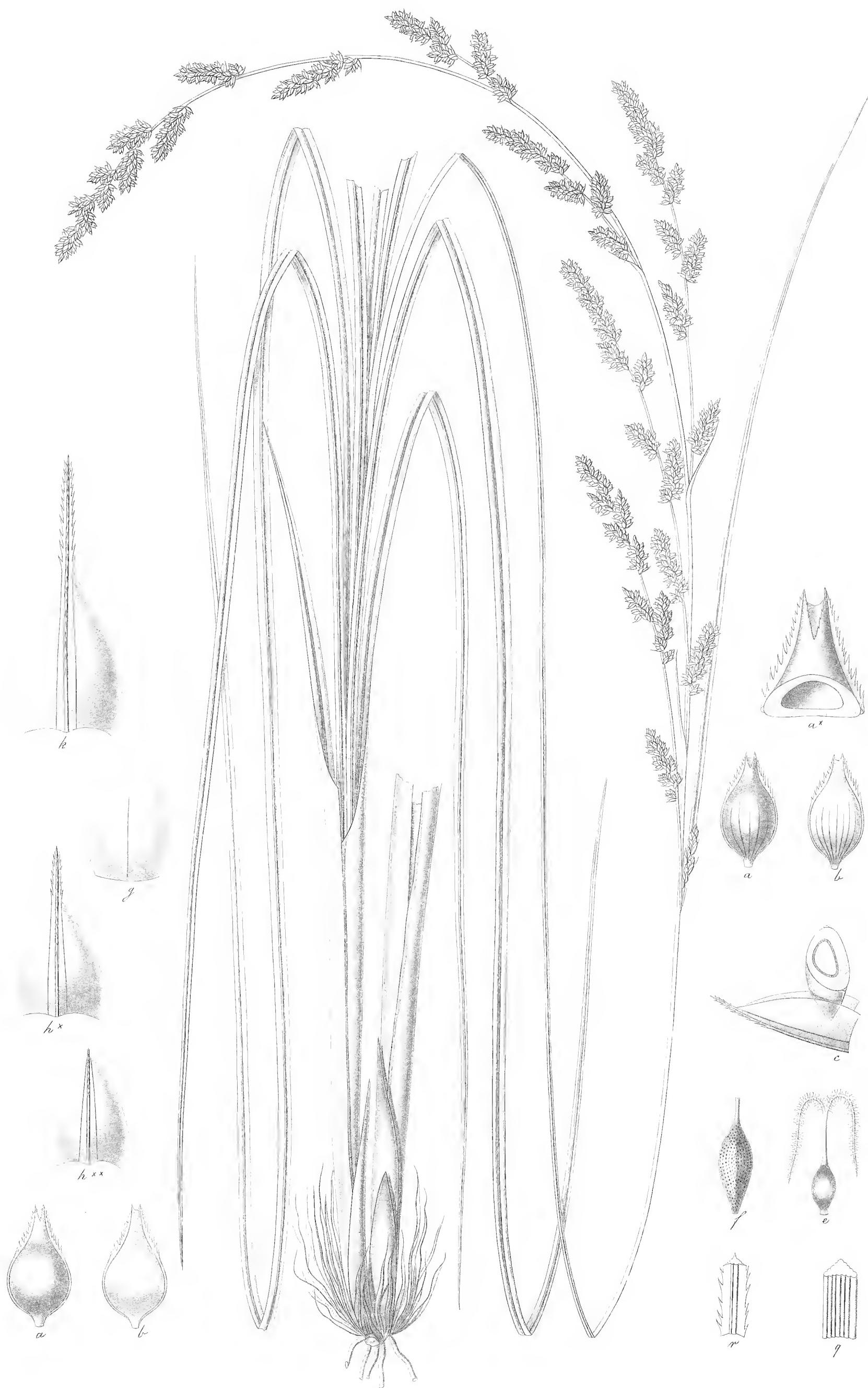
t. 122.



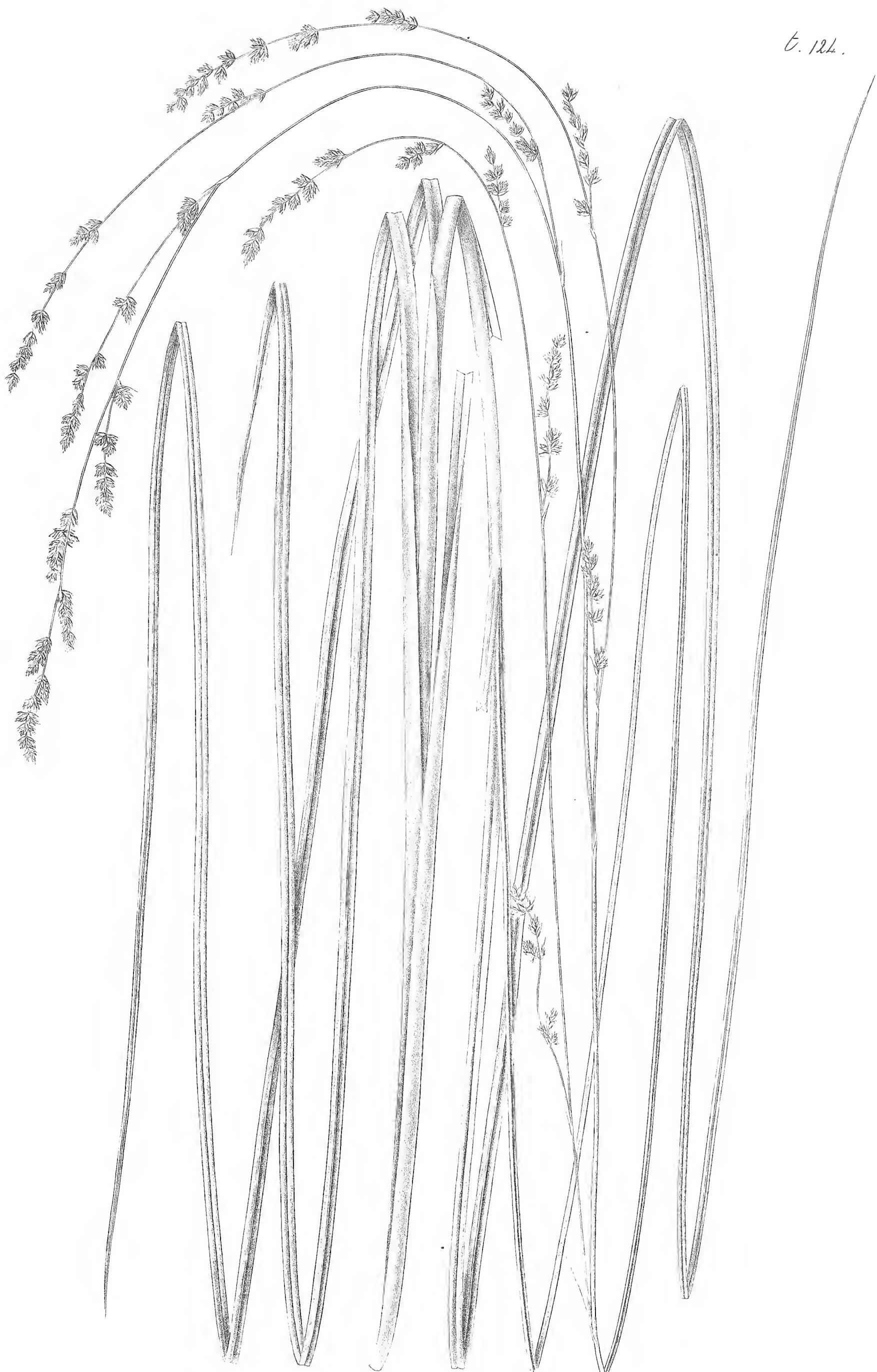
Rees. det.

C. virgata

Rees. det.



t. 124.



Rees. del.

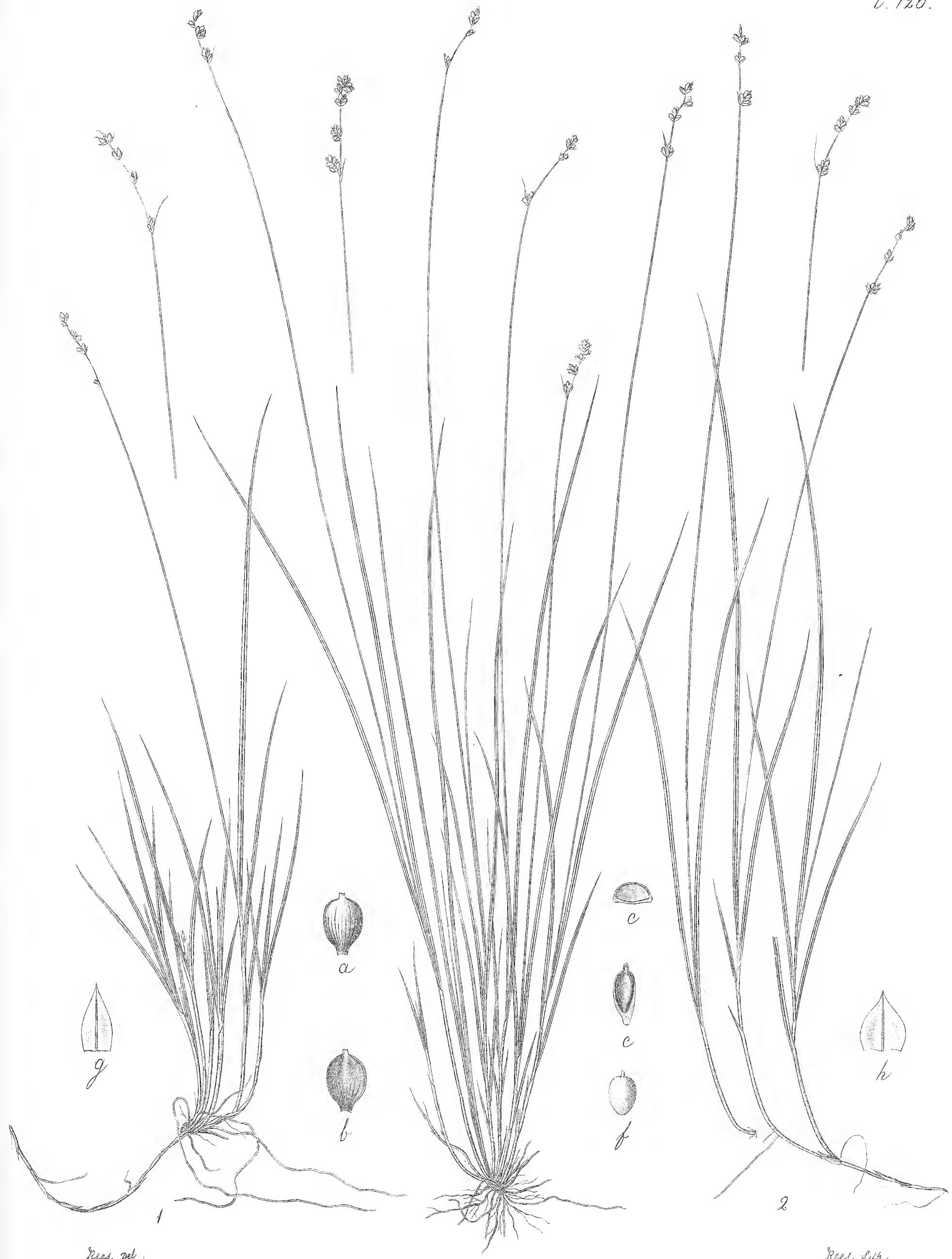
Rees. Lith.

C. secta



C. TENELLA

t. 126.

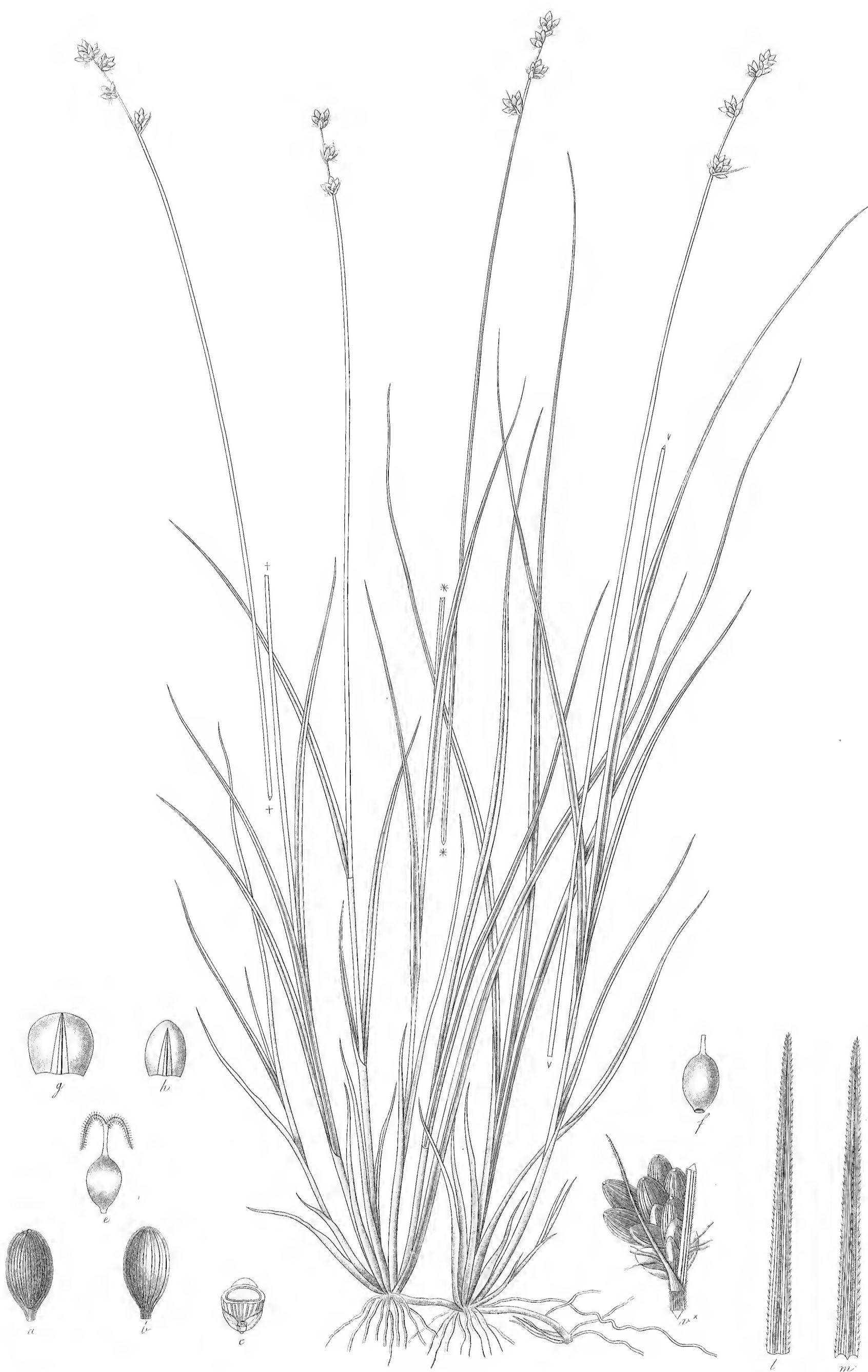


Kees. det.

Kees. lith.

C. tenella.

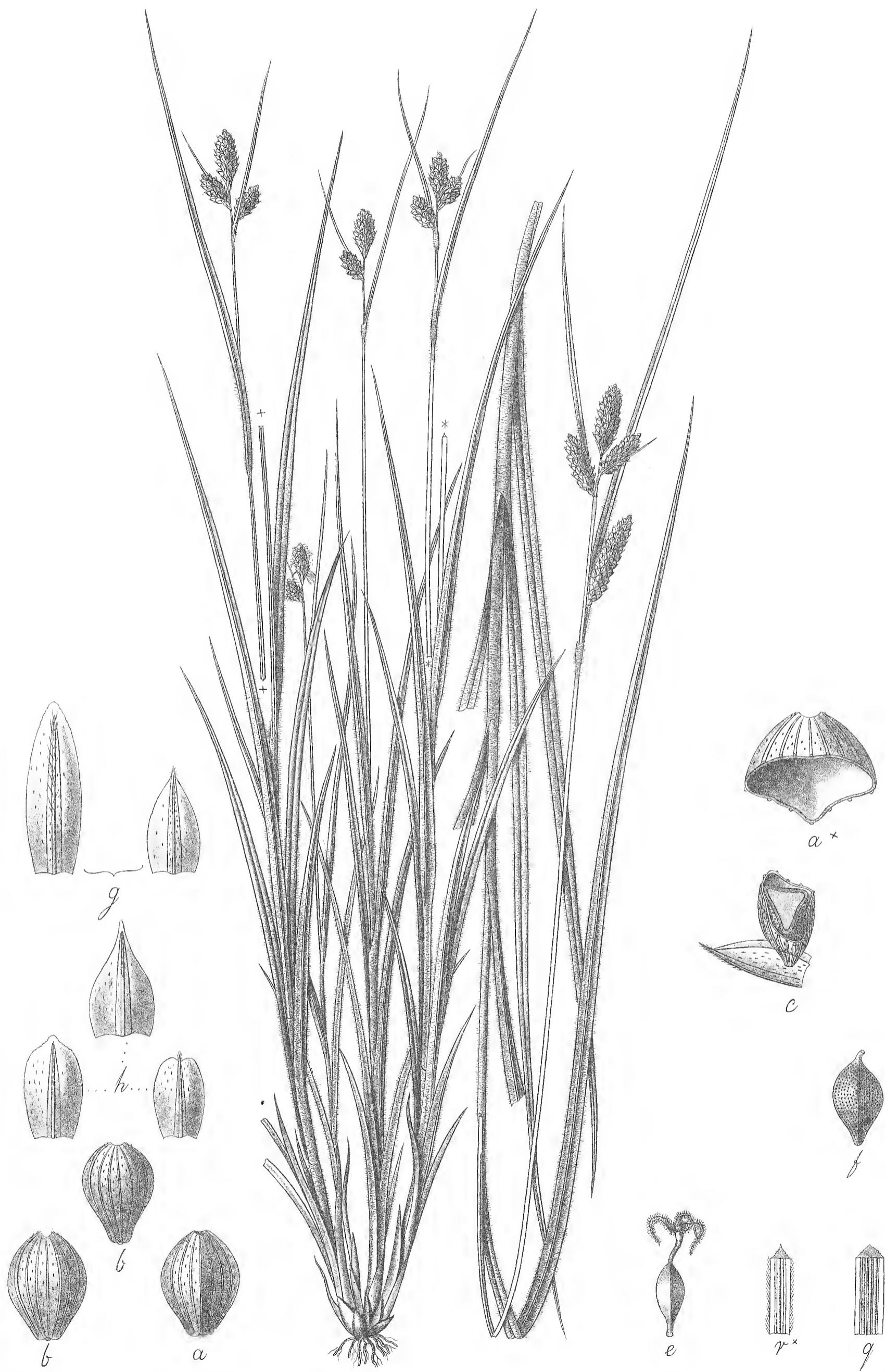
1. Sweden. Kees.
2. U.S.A.



C. L O L I A C E A.

*M.**c.*

t 128.

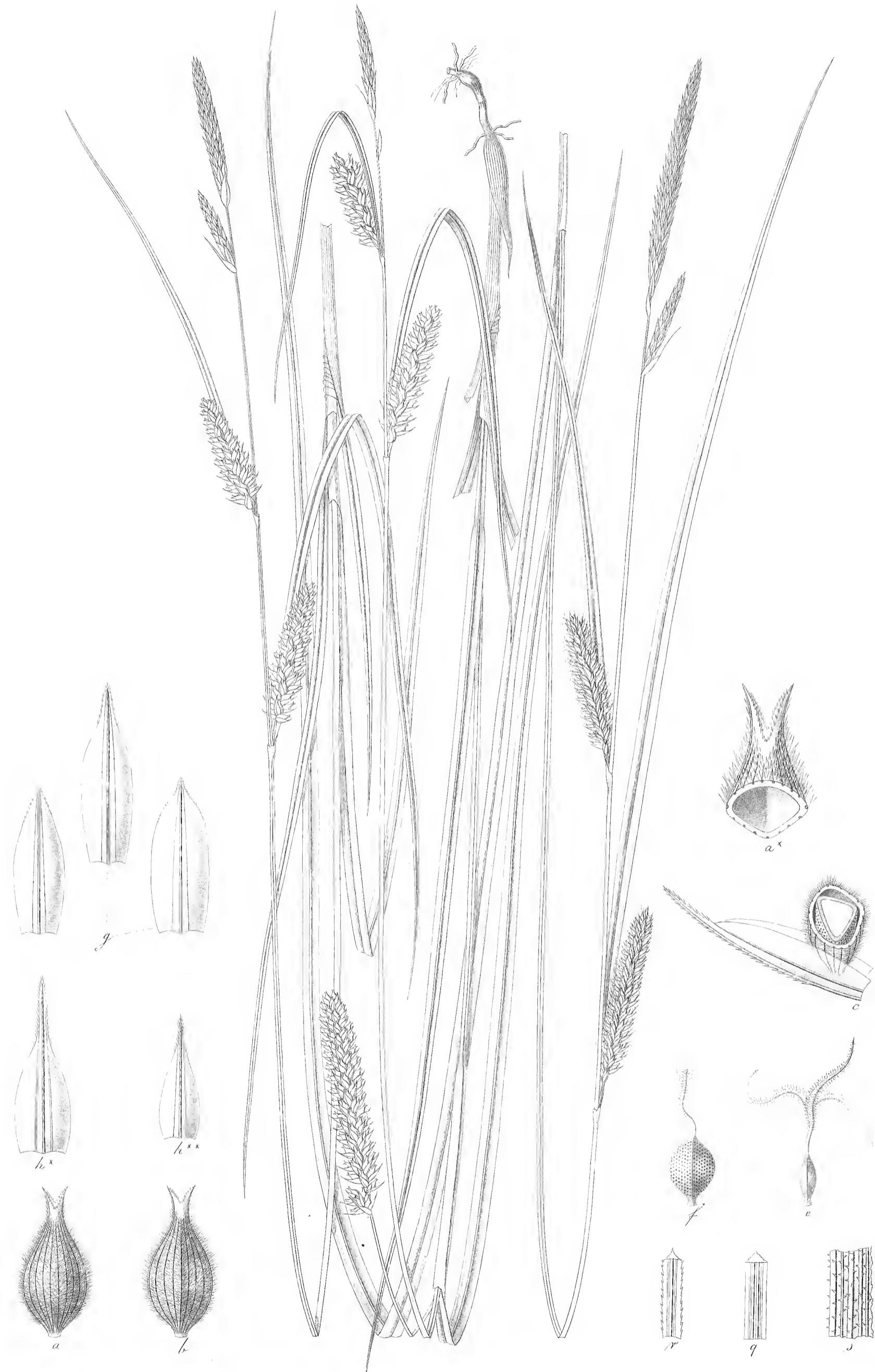


Maubert. del.

Rees Lith.

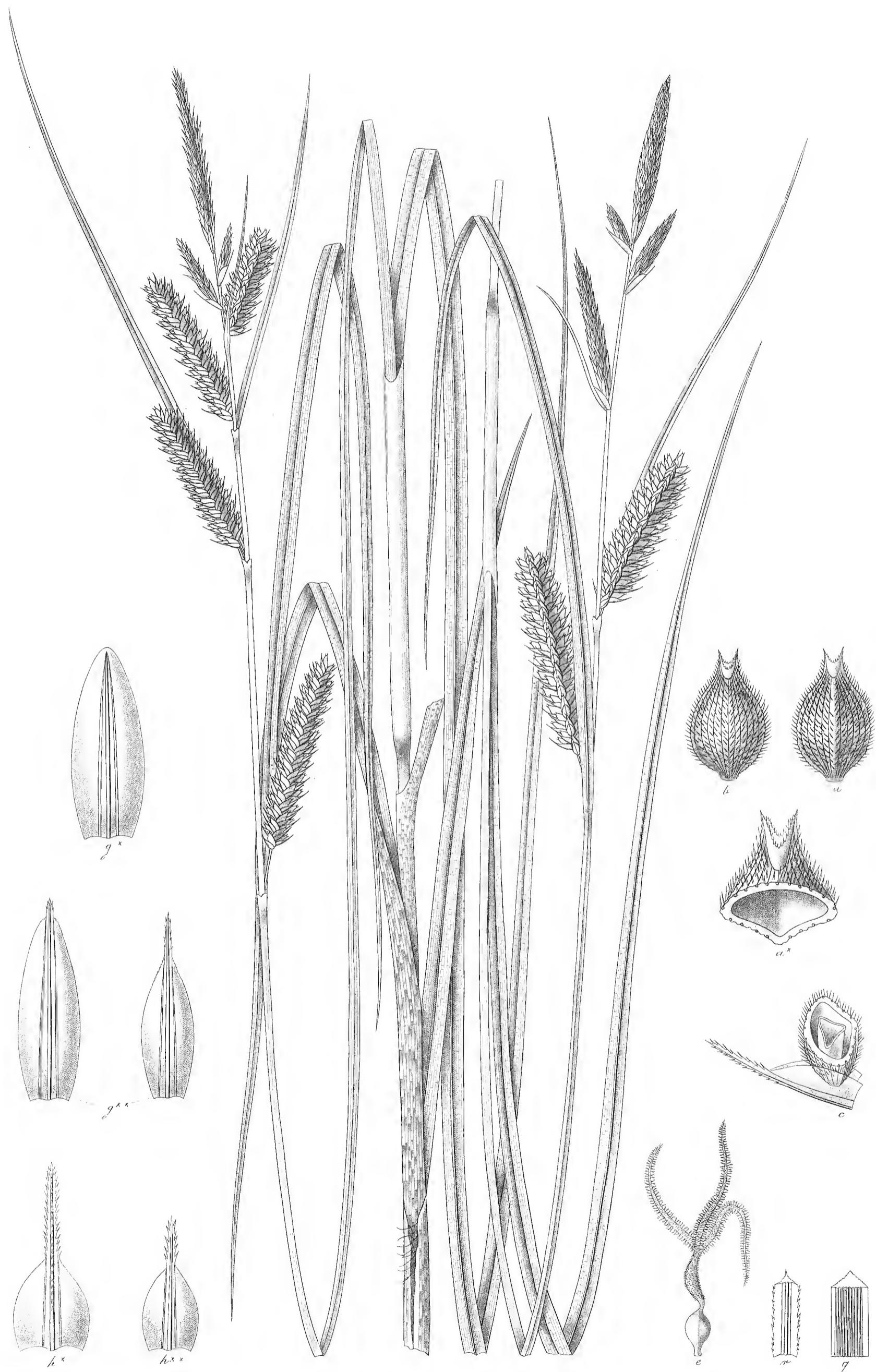
C. triceps.



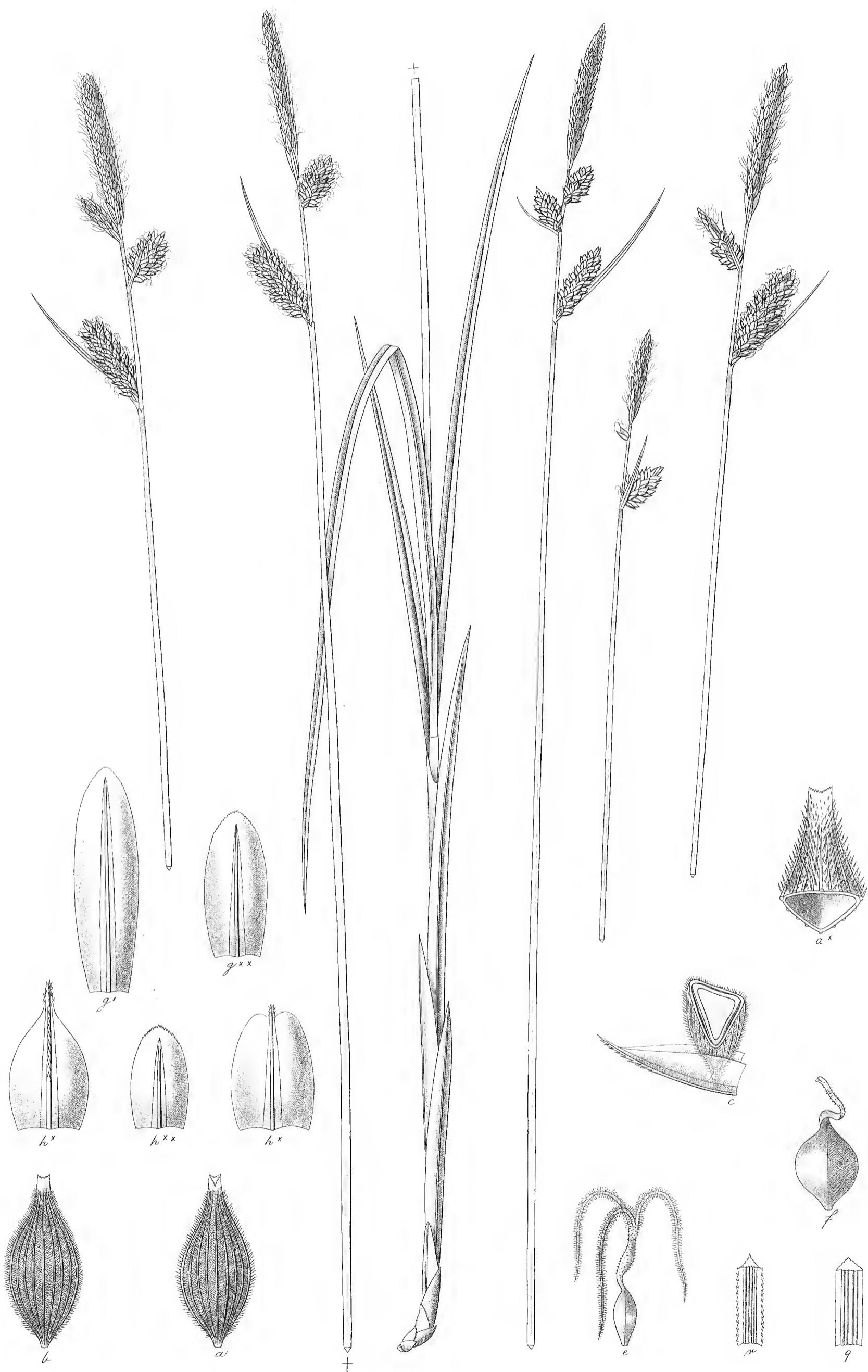


C. LANUGINOSA.

*M.**P.*

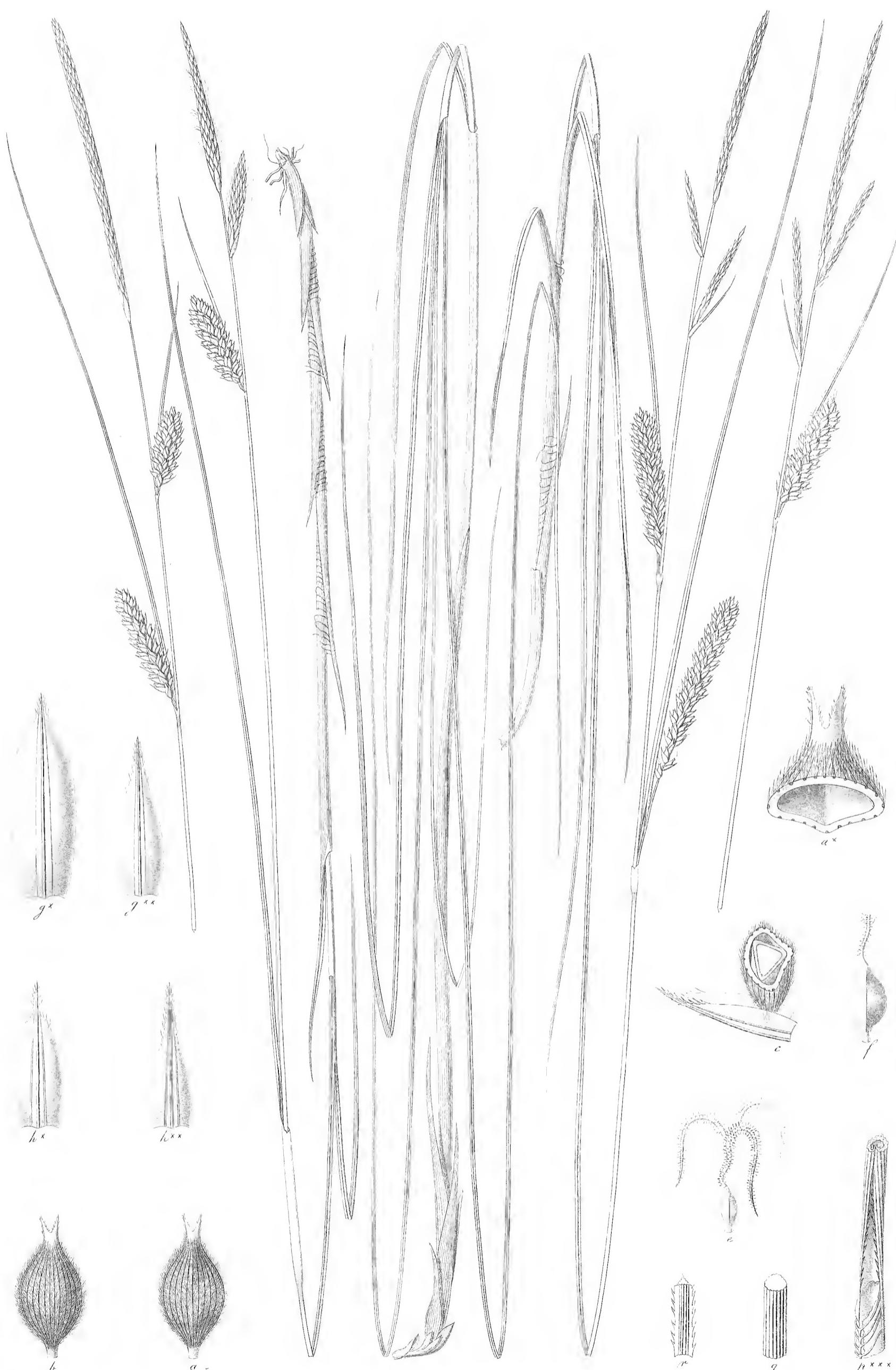


C. E V O L U T A.



C. V E S T I T A.

*M.**O.*



C. FILIFORMIS.

P.

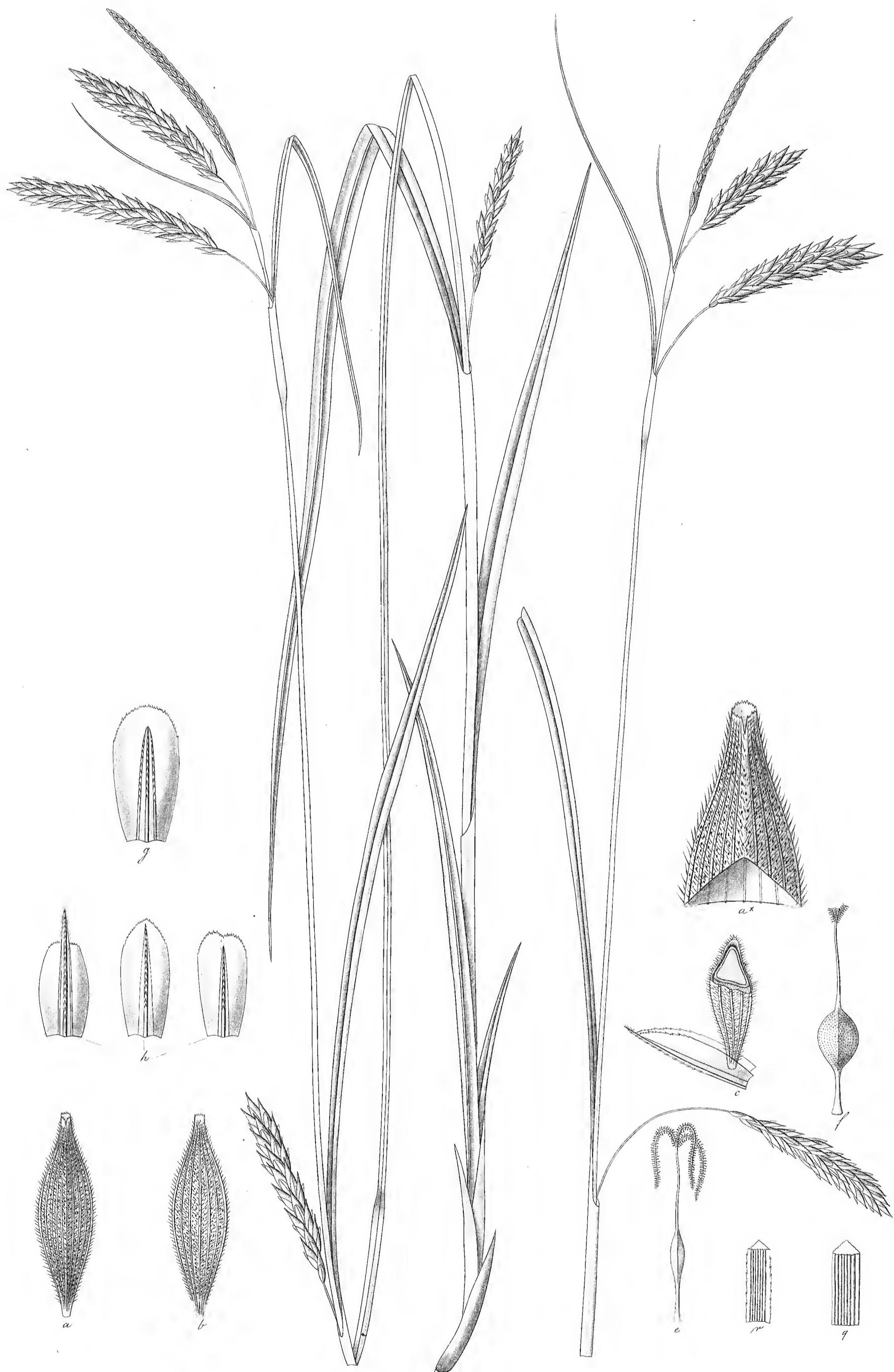




M.

C. SULLIVANTII.

c.



C. VENUSTA.

M.

c.

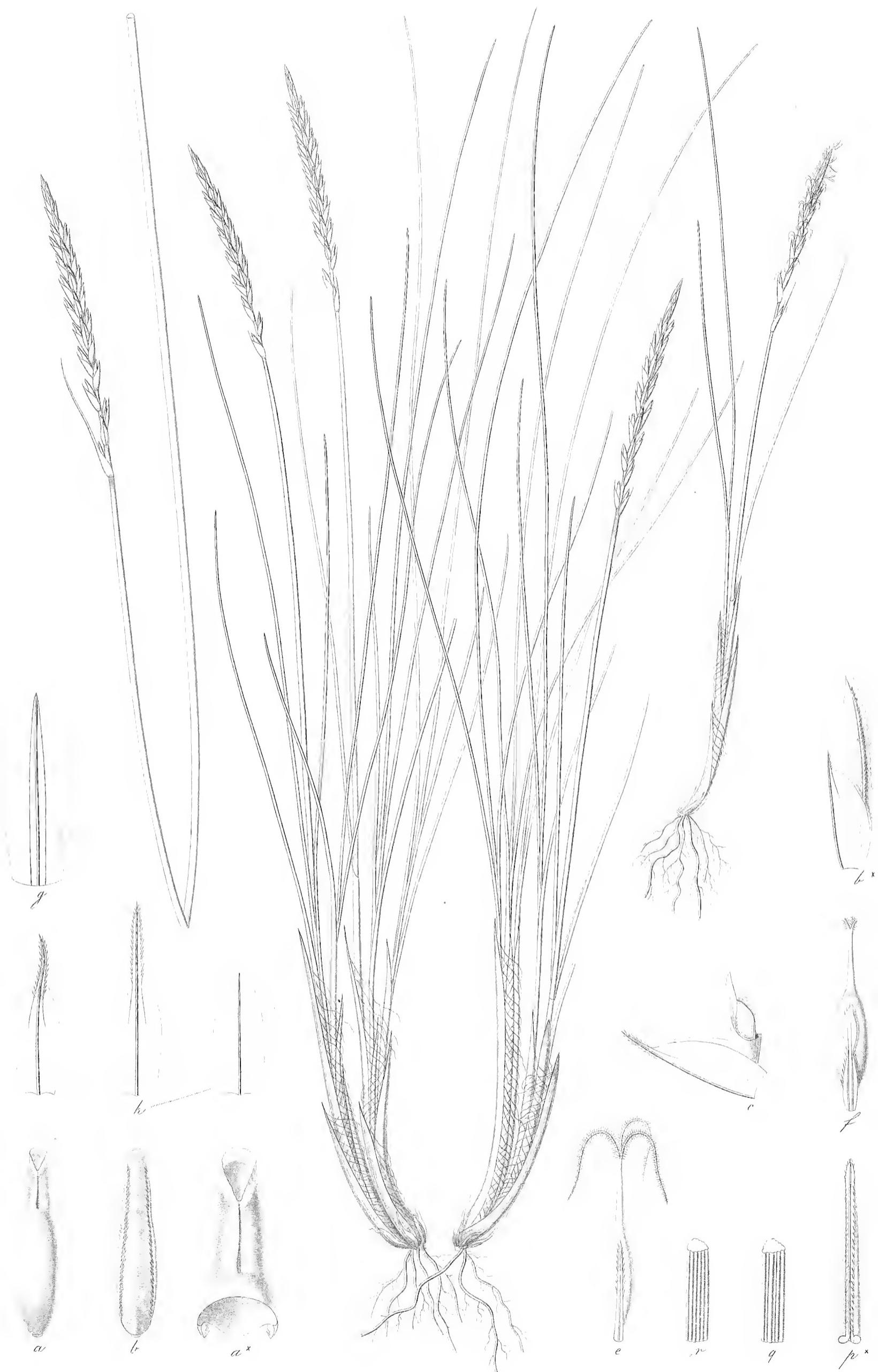


Maurand et Paes. Del.

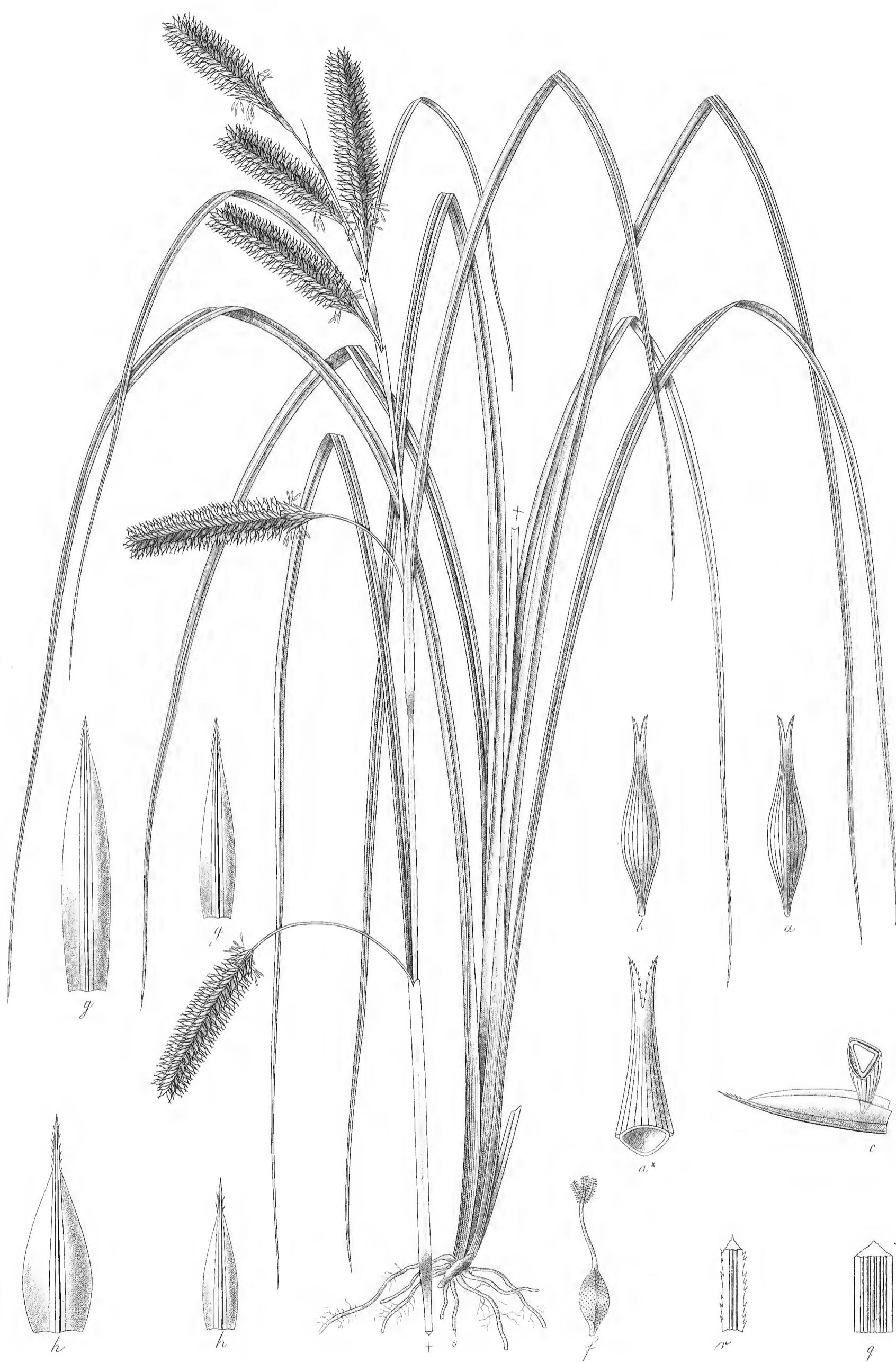
C. arcuata.

Rees. Lith.

t.136.



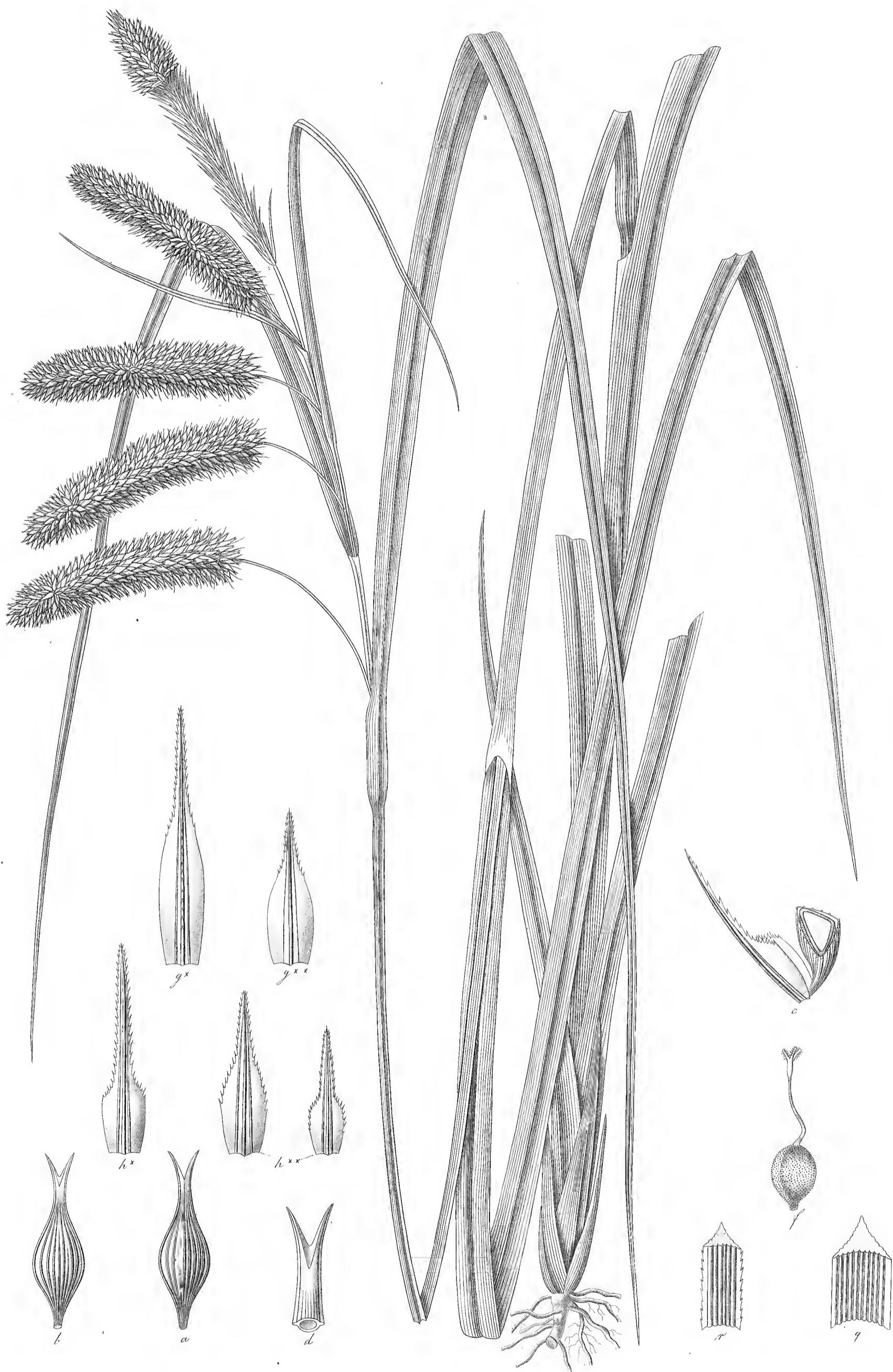
C. LINEARIS.



C. FORSTERI.



CAREX SP. (var.?)



C. FASCICULARIS.

M.

6.140



Kees. Sel.

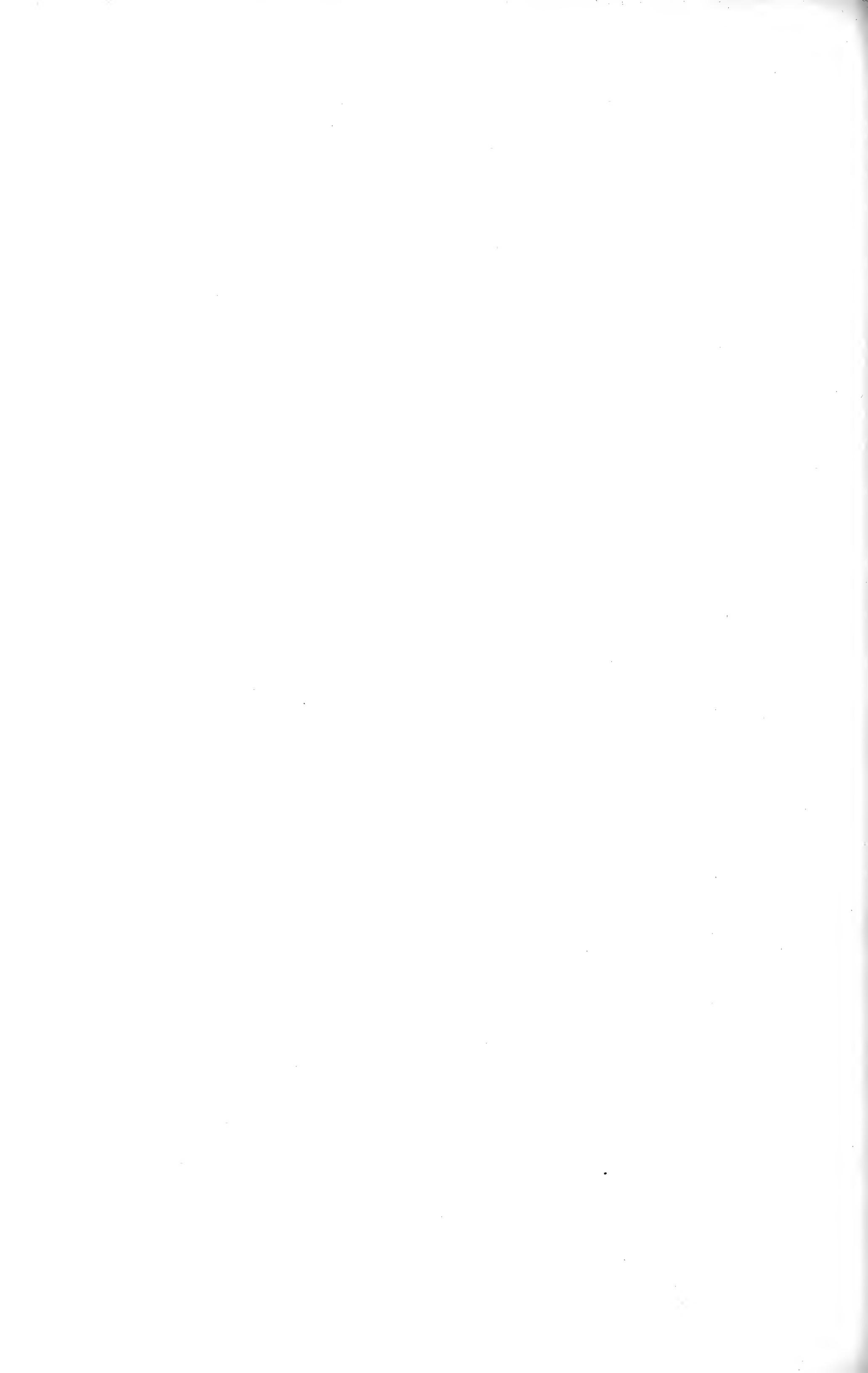
Kees. Lith.

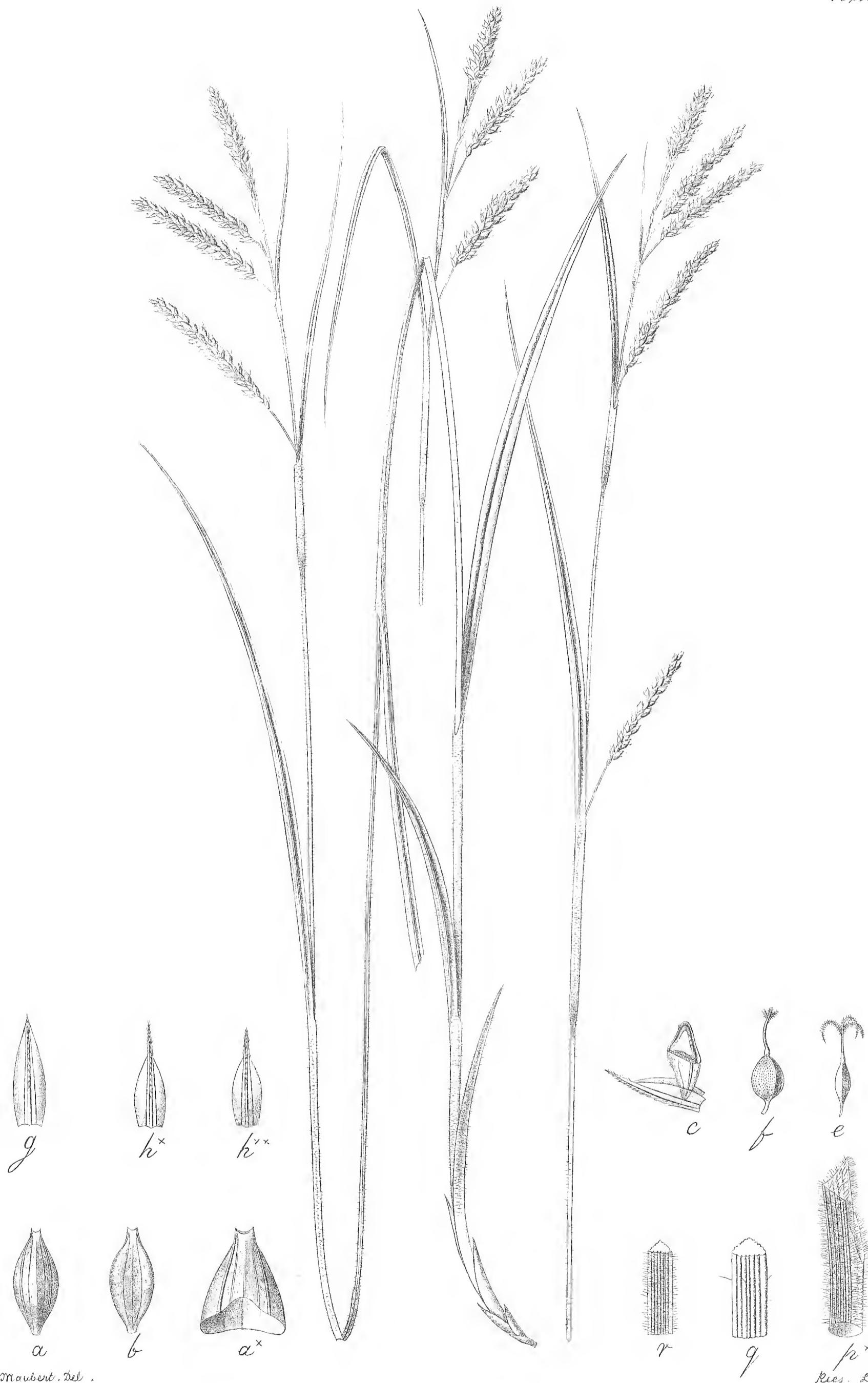
C. fascicularis

6. 141.



C. formosa.





Moubert. Del.

Rees. Lith.

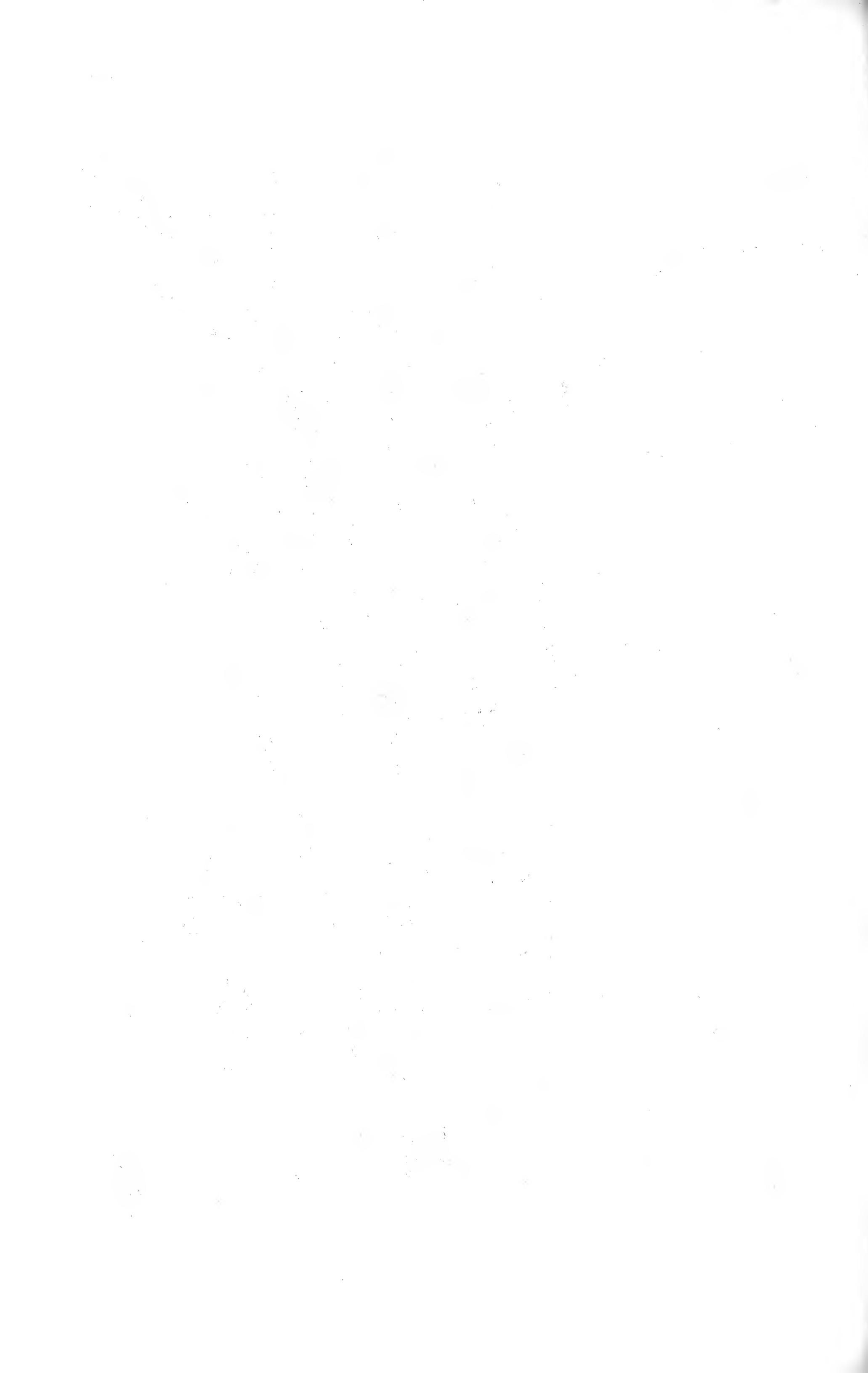
C. oxylepis.

6.143.



C. Davisii.

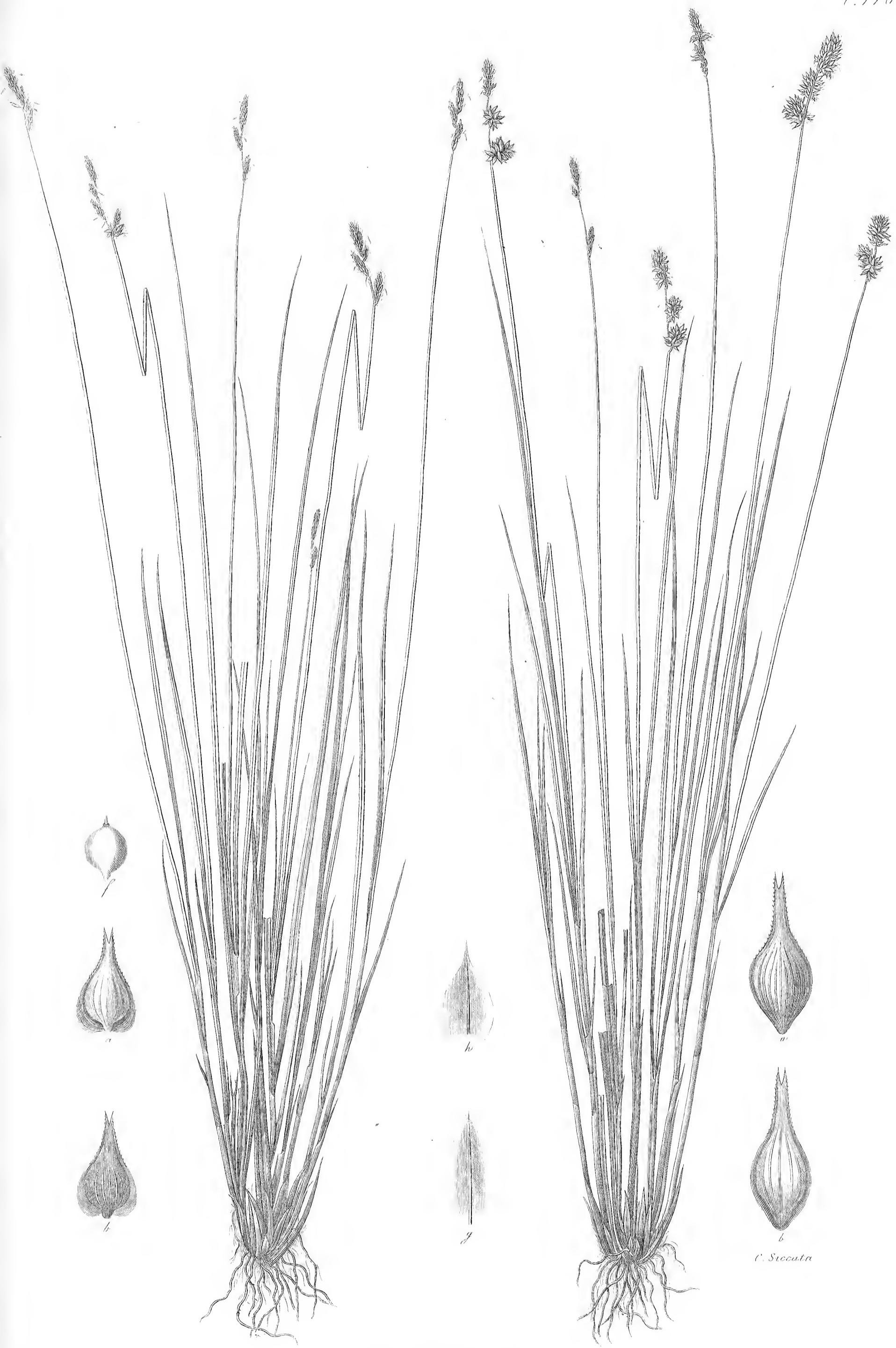






C. GRACILLIMA.

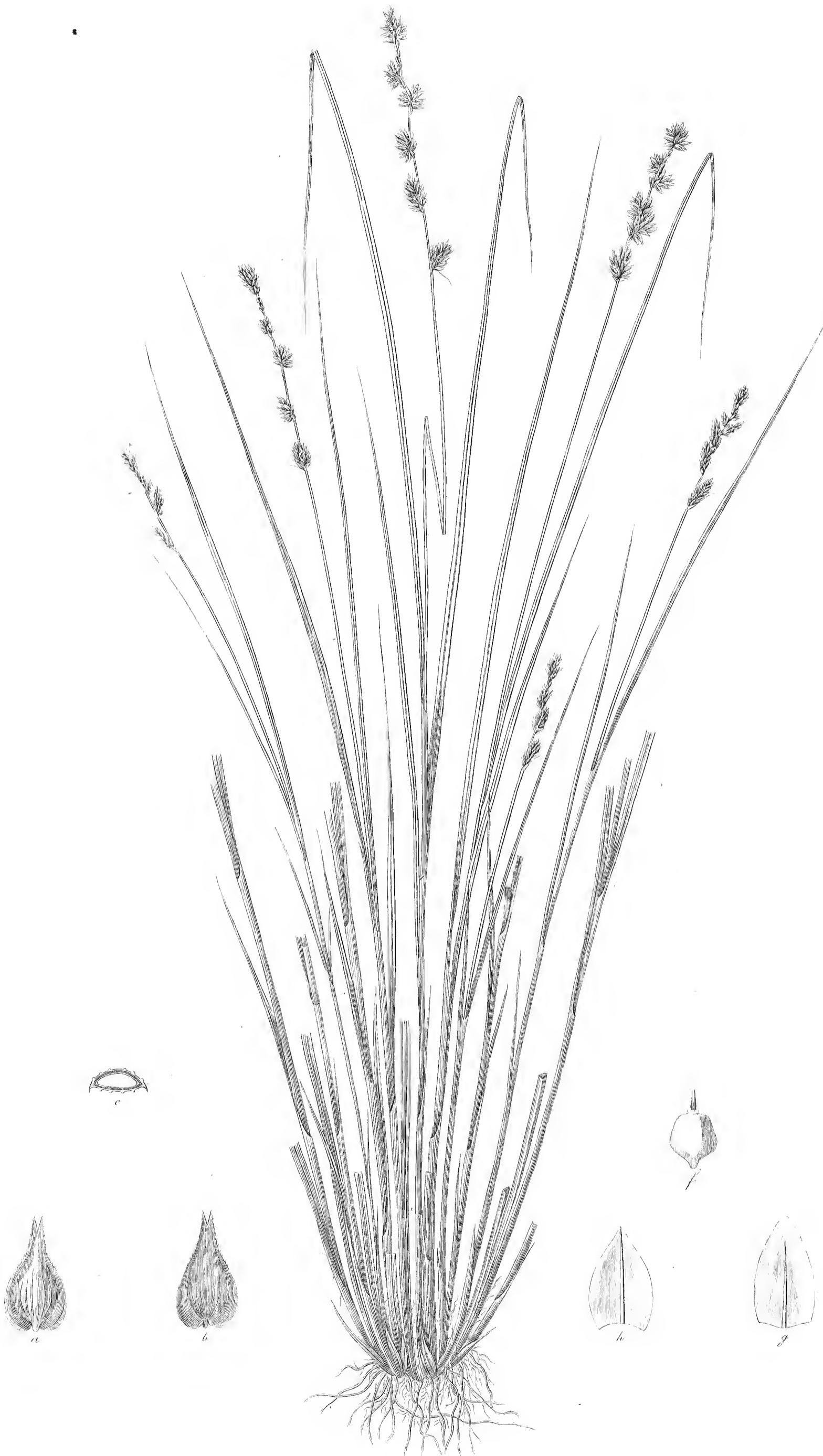
*M.**c.*



C. STERILIS.

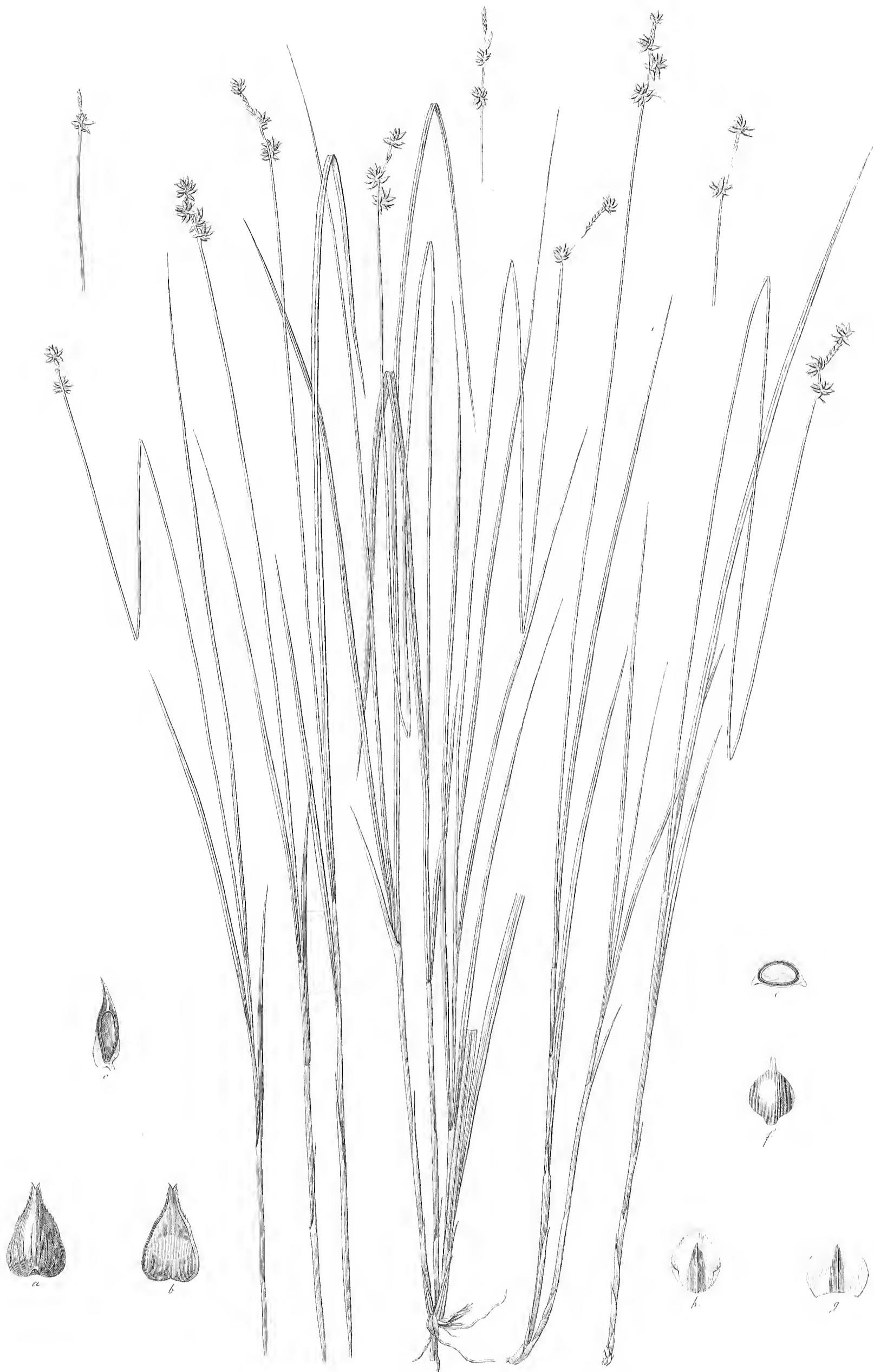
C. Siccata

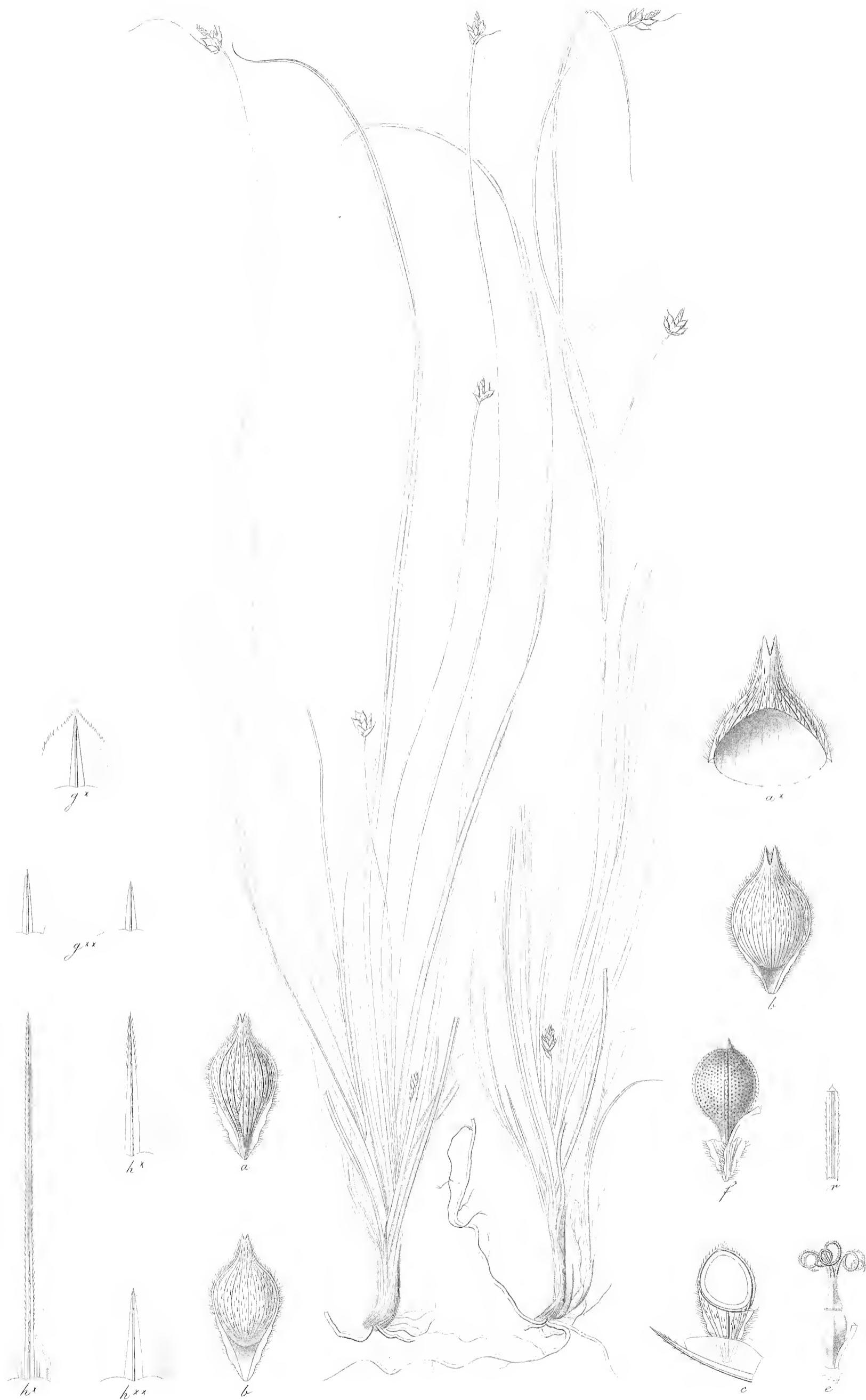
R.



C. STANS L.

R

C. *STELLARIA*. VAR. *SUBSPICATA*.



C RADICALLIS.



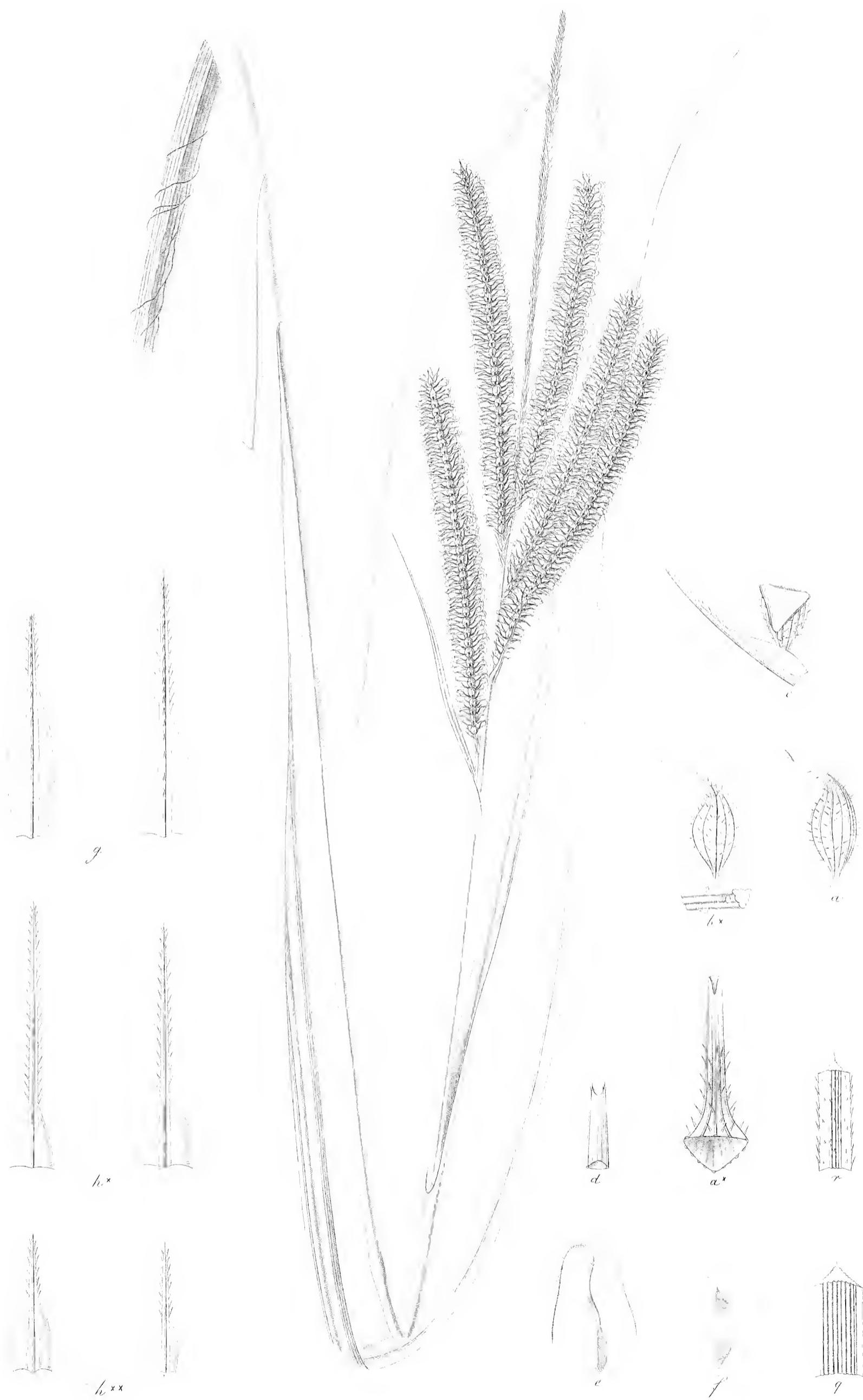


C. P A R V A.



C. OLIVACEA.

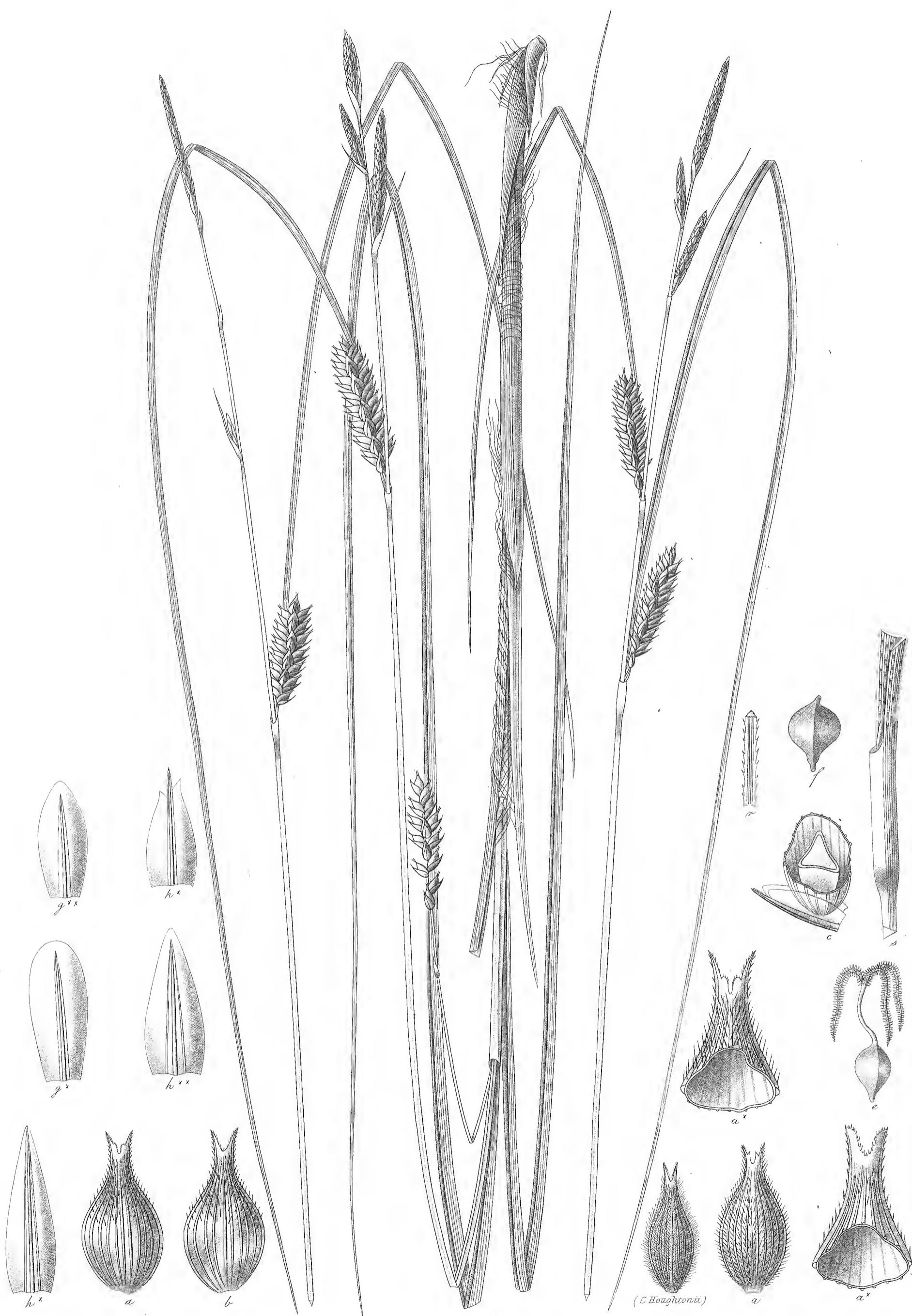
L. 150.



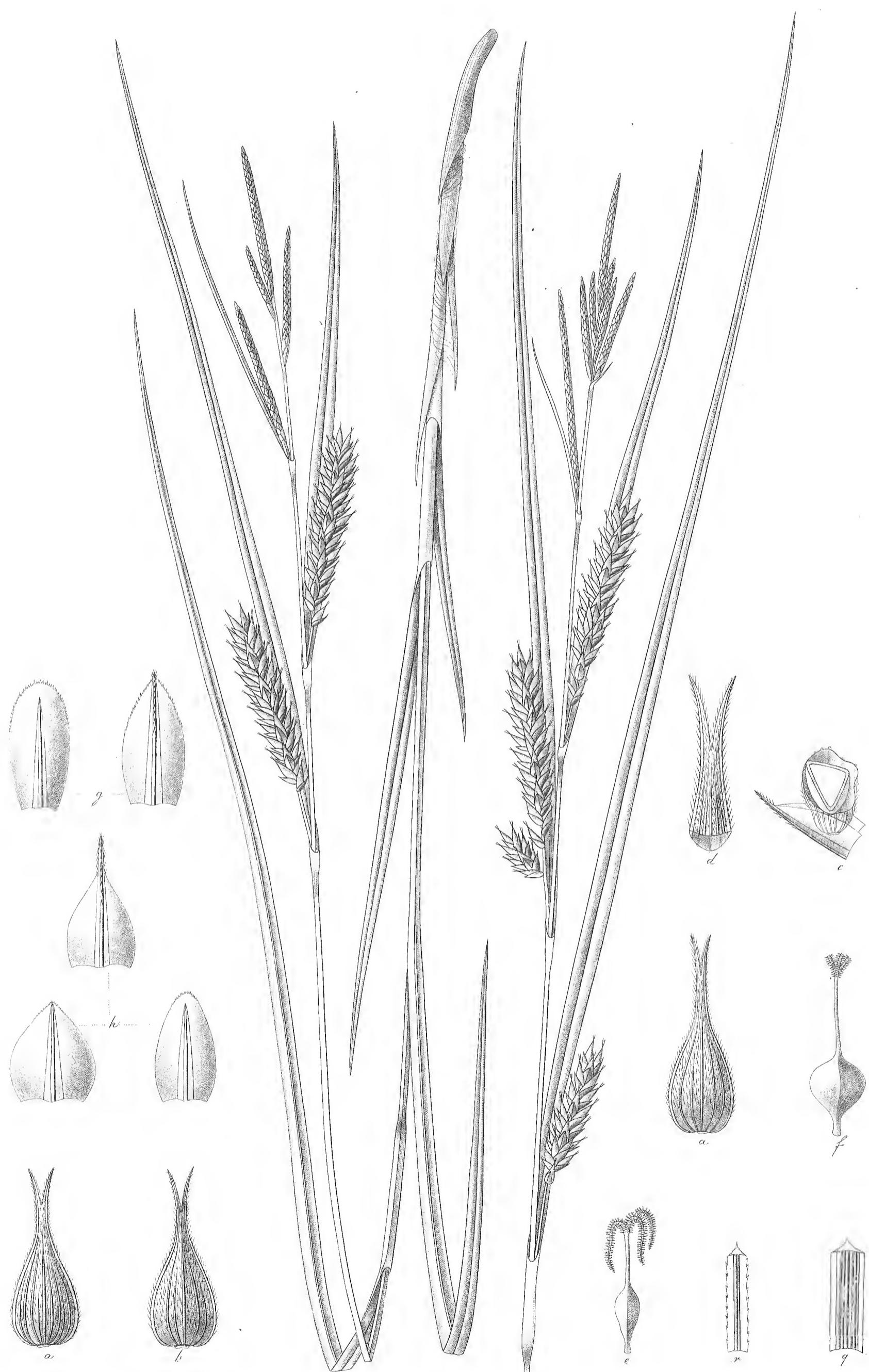
C. EXCURVA.

M.

P.



C. S T R I A T A.



C. TRICHOCARPA.

M.



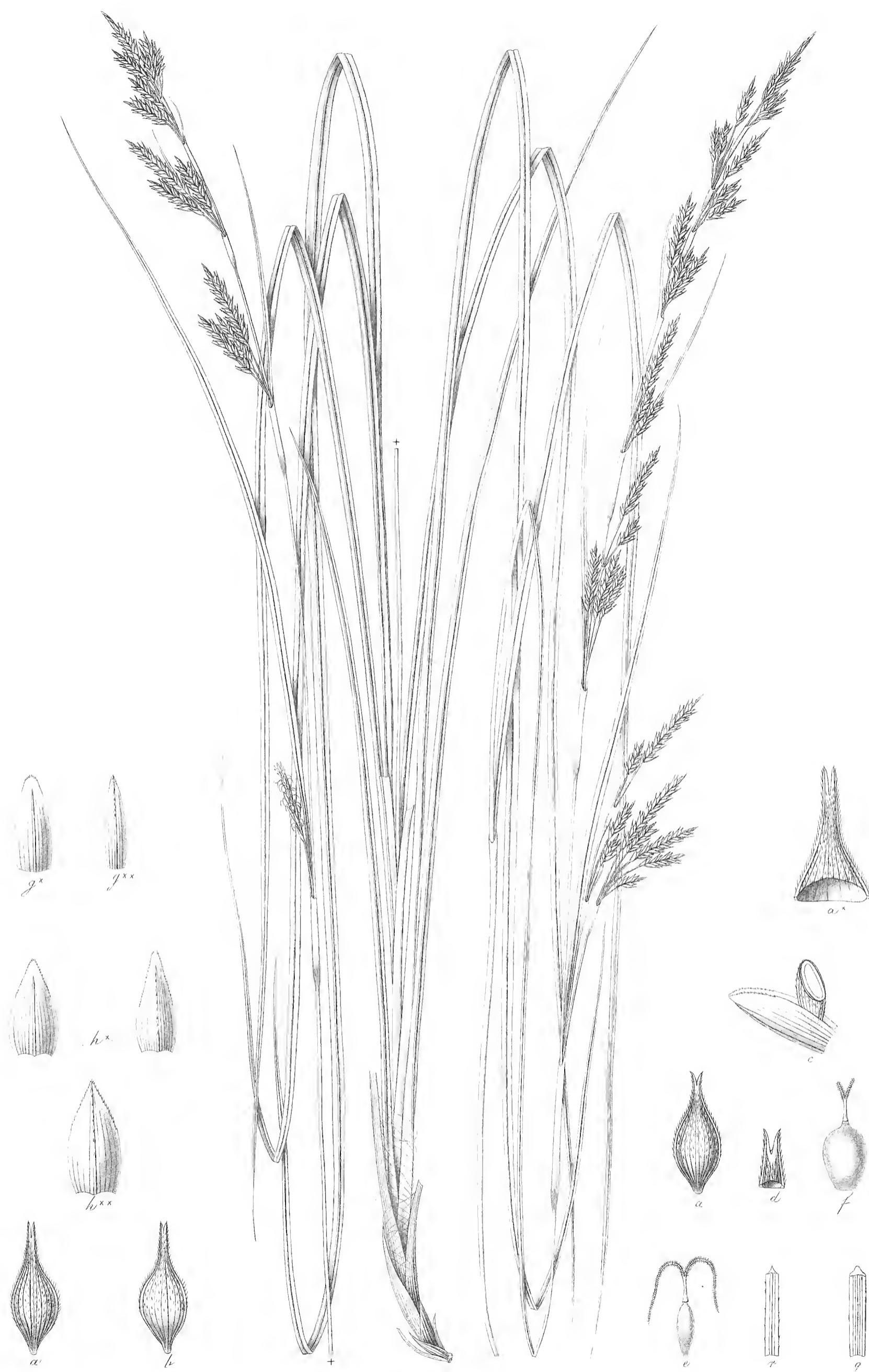
C. ALTA.

M.

P.

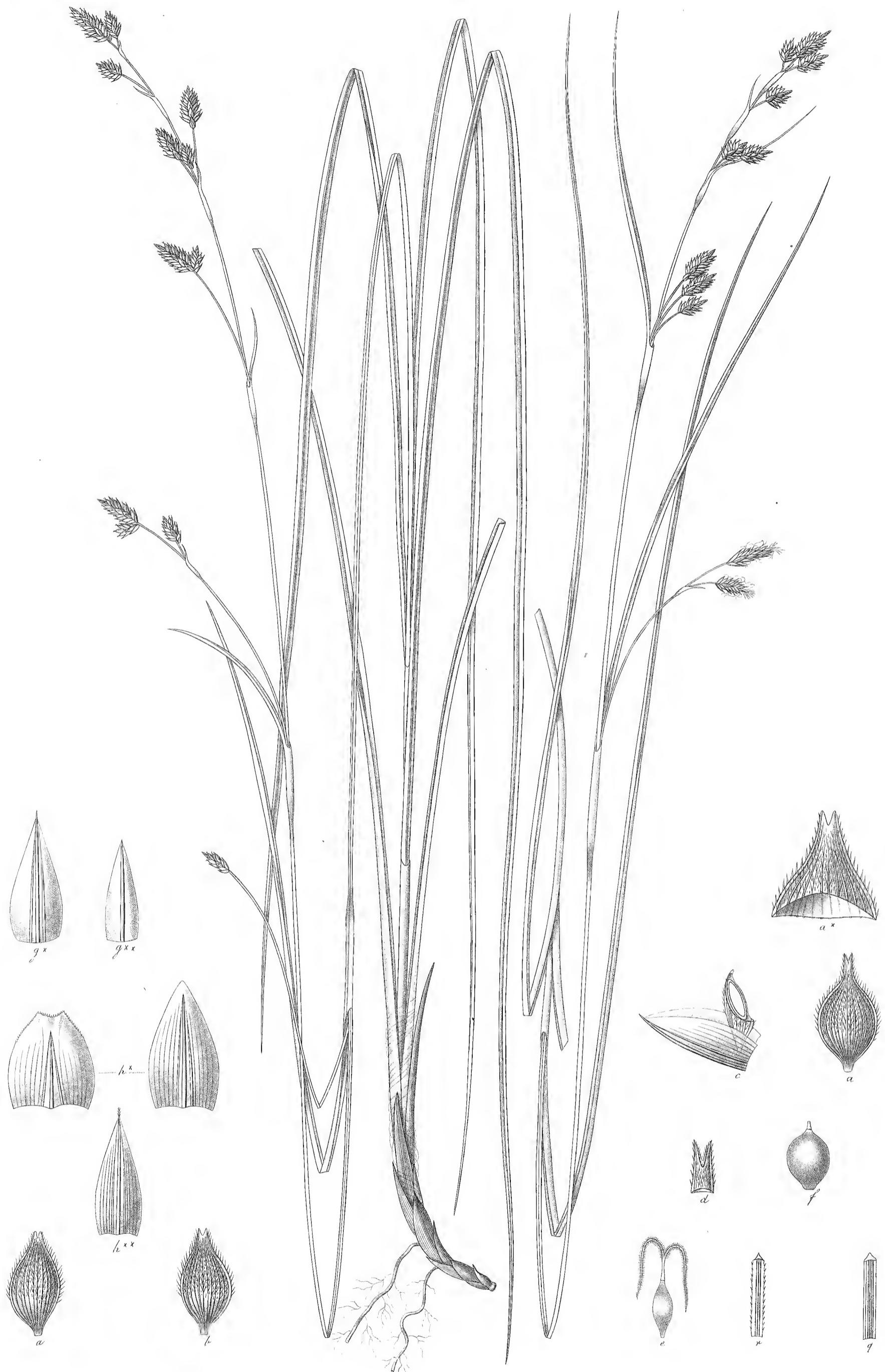


C. GRACILIS.



C. GRACILIS.

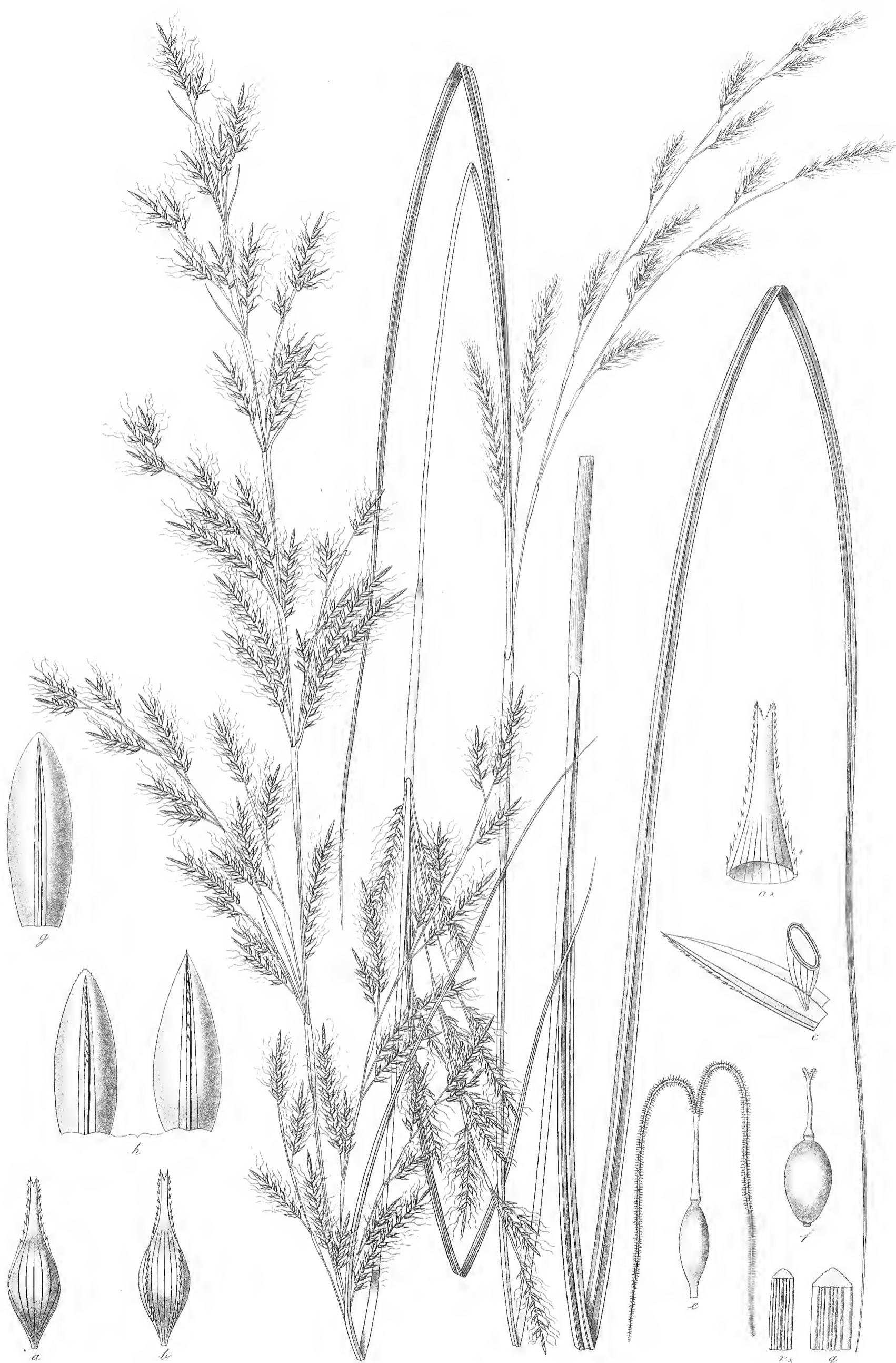
*M.**P.*



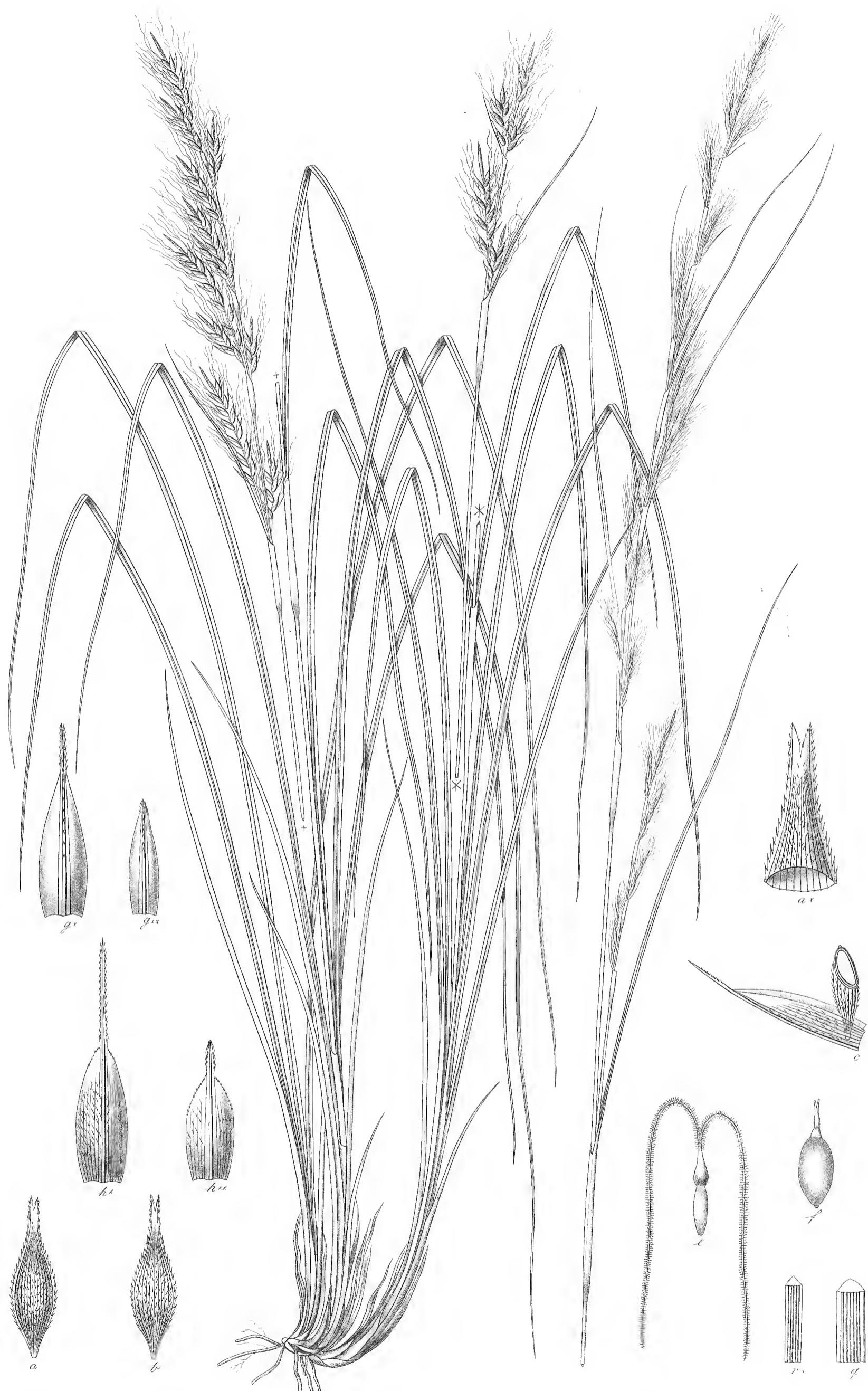
C. GRACILIS. B.

M.

c.



C. LONGICURRIS.



C. TEINOGYNA.

A. 159.



C INTUMESCENS.

A 160.



CINTUMESCENS.

G

H.

t. 161.

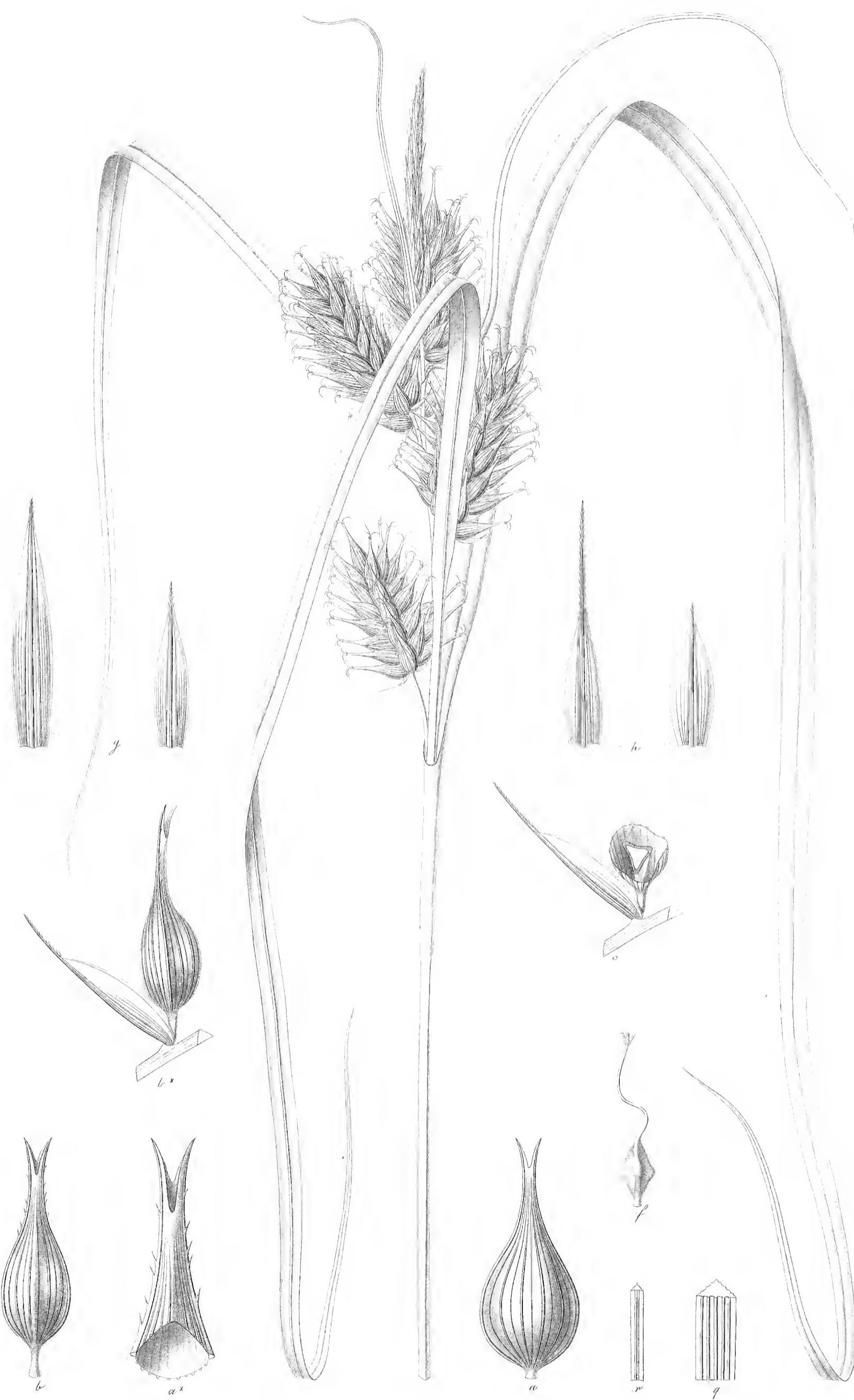


C. G R A Y I.

g.

ll.

t. 162.



C. L U P U L I N A.

iii



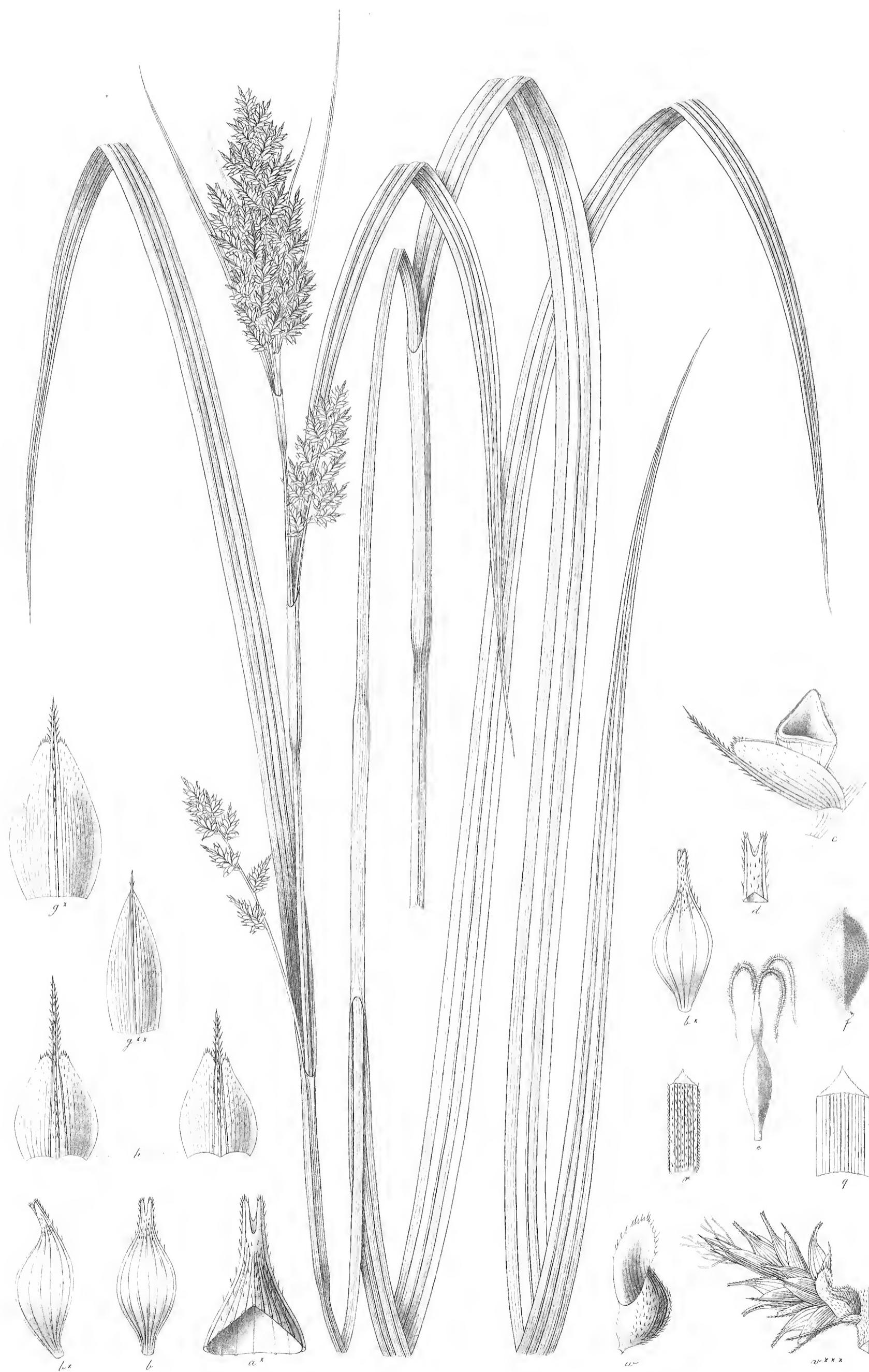
C. LUPULIFORMIS.





C. H Y S T R I C I N A.

*M.**P.*





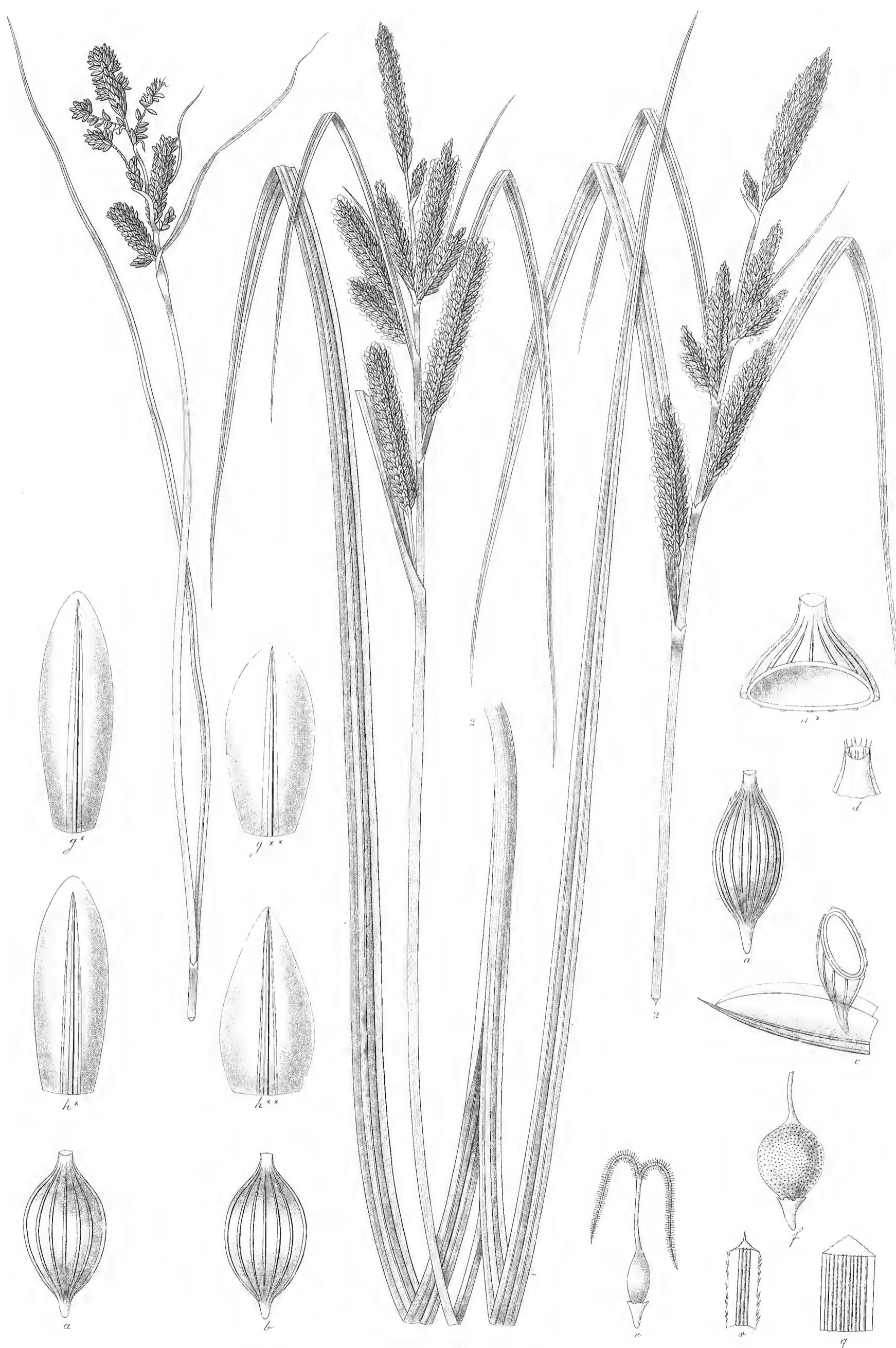
C. TERES.



C. PHACOTA.

*M**P*



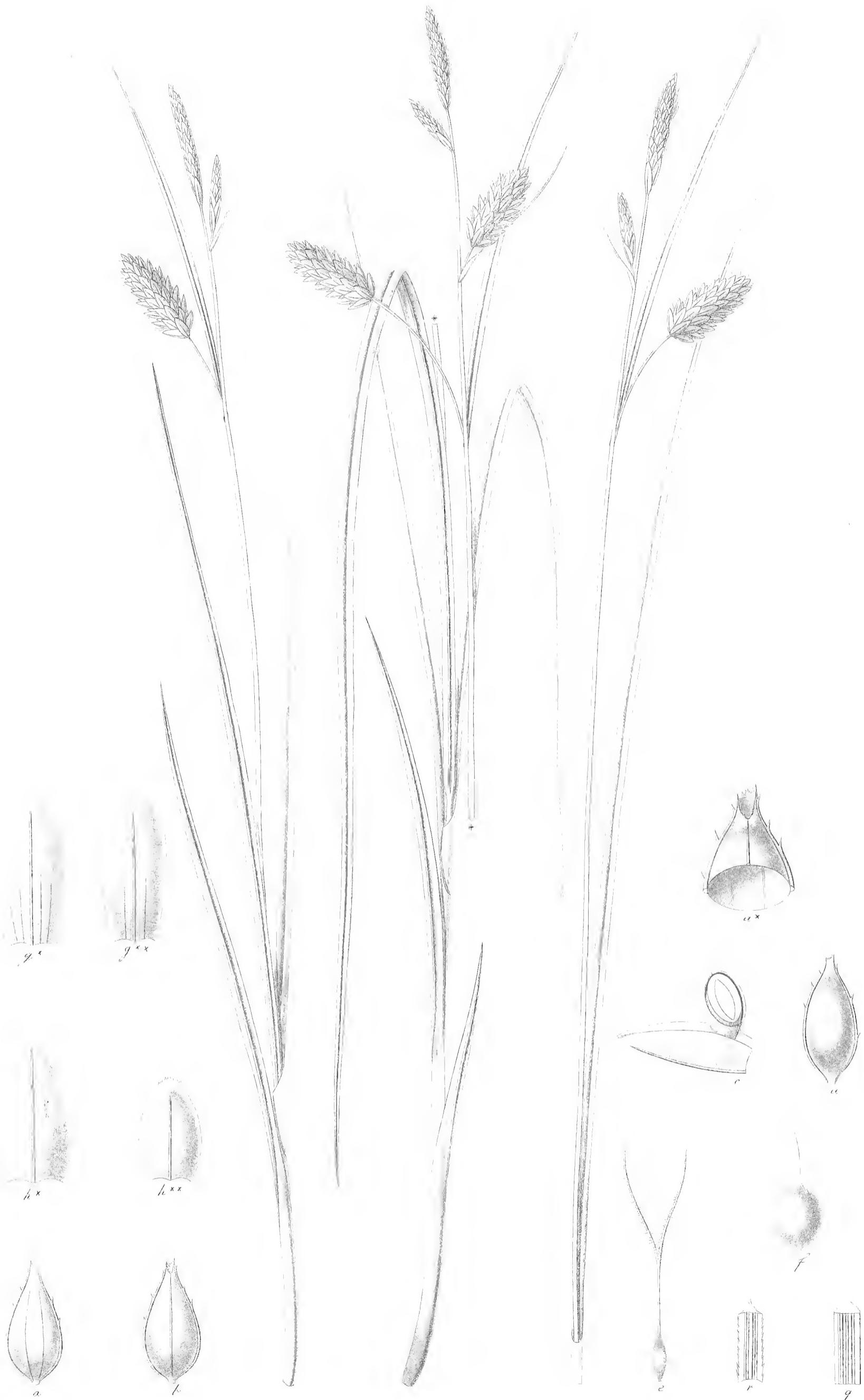






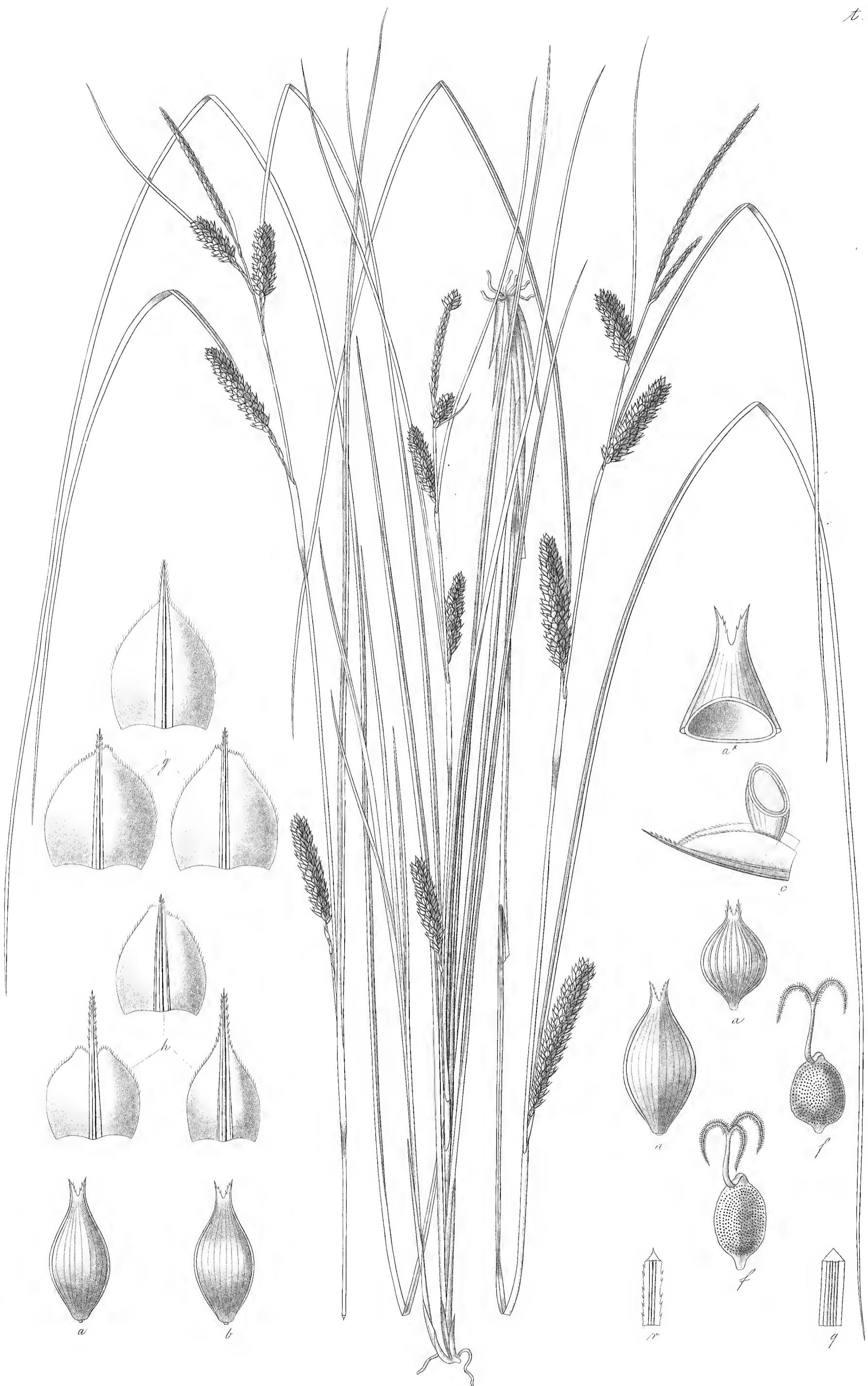
C. CRYPTOCARPA.

*M.**P.*



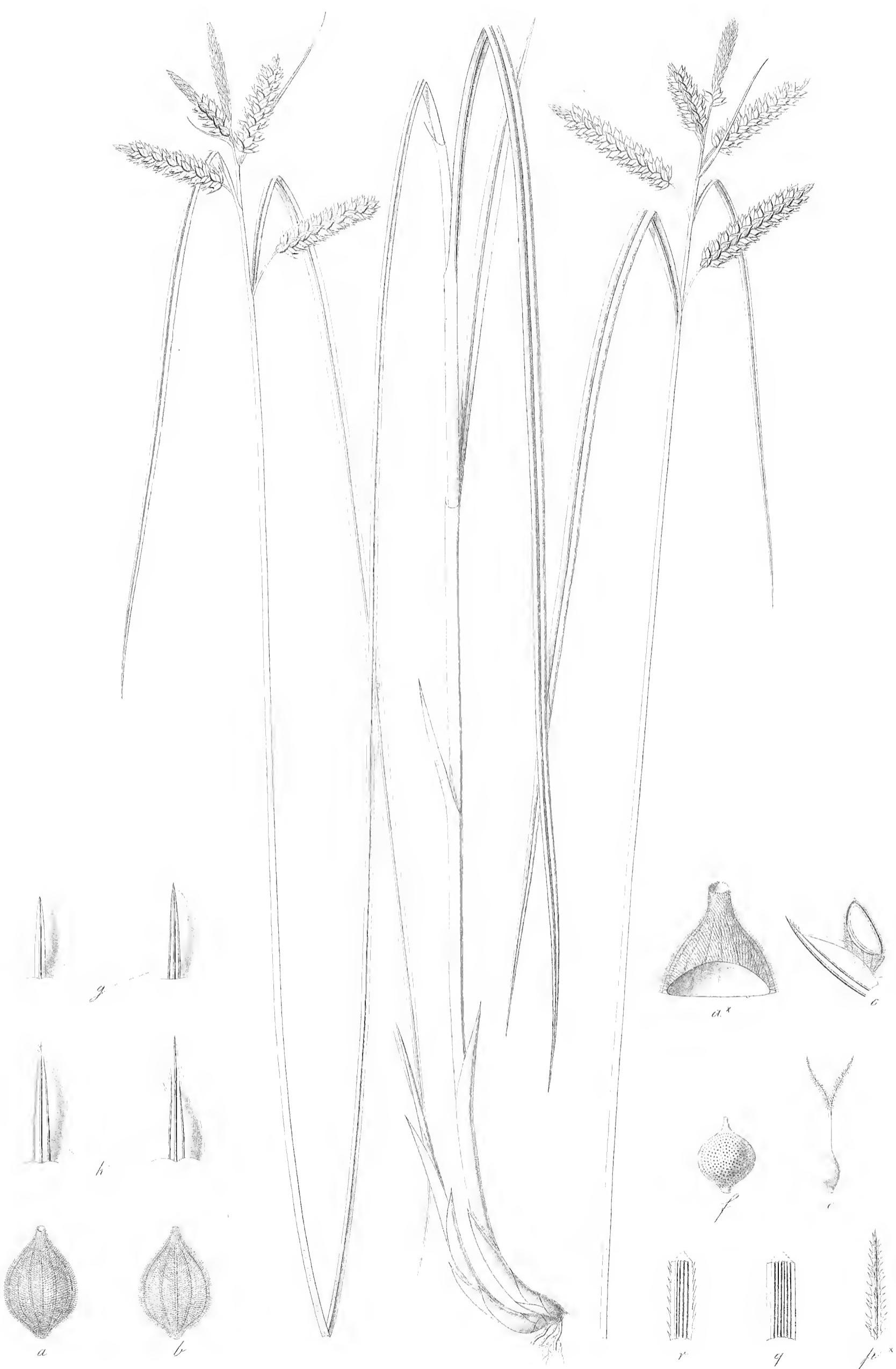
C. A M B U S T A.

*M.**P.*



C. L U C I D A.

A. 174.



C. PRUINOSA.

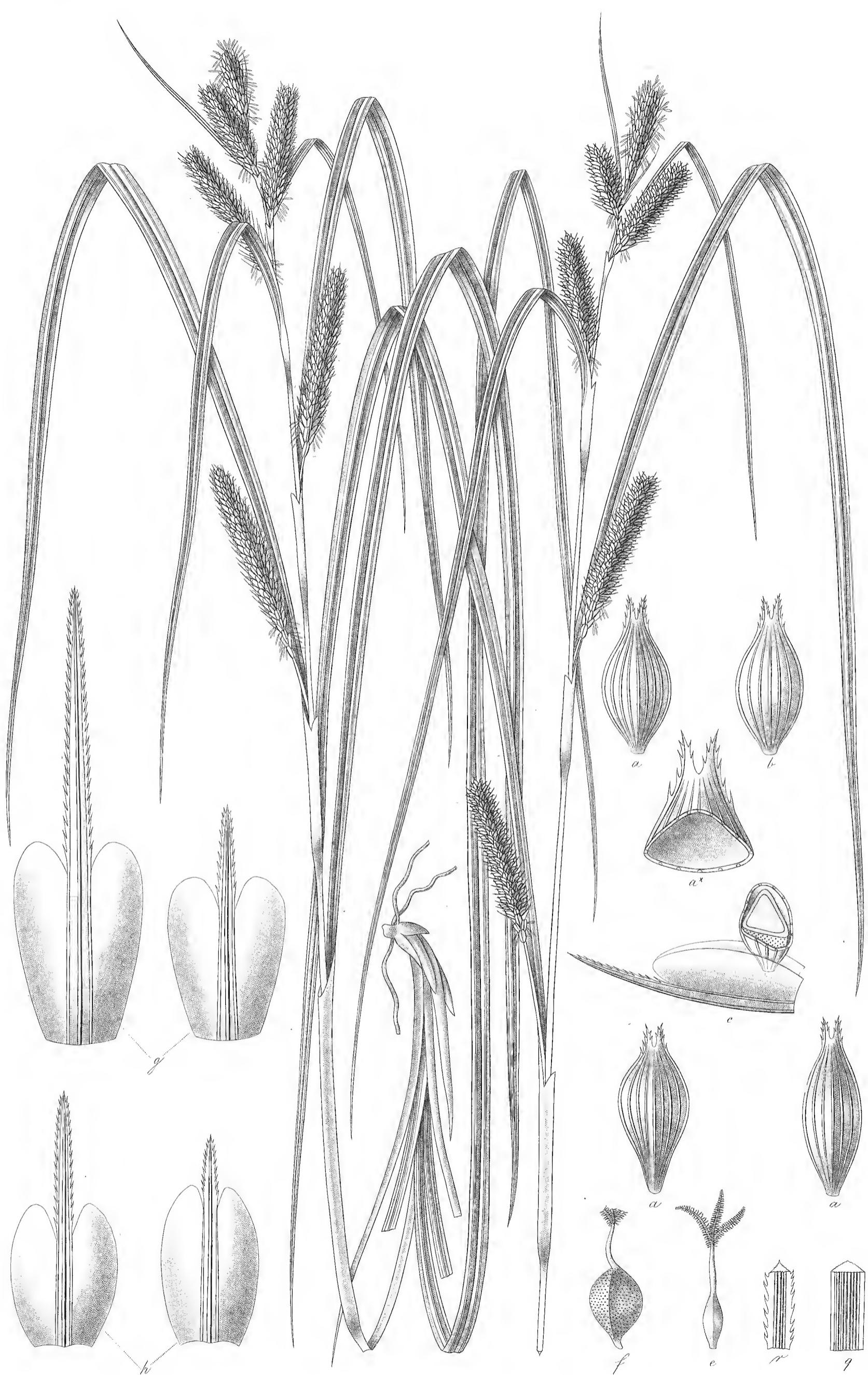


C. SOLANDRI.

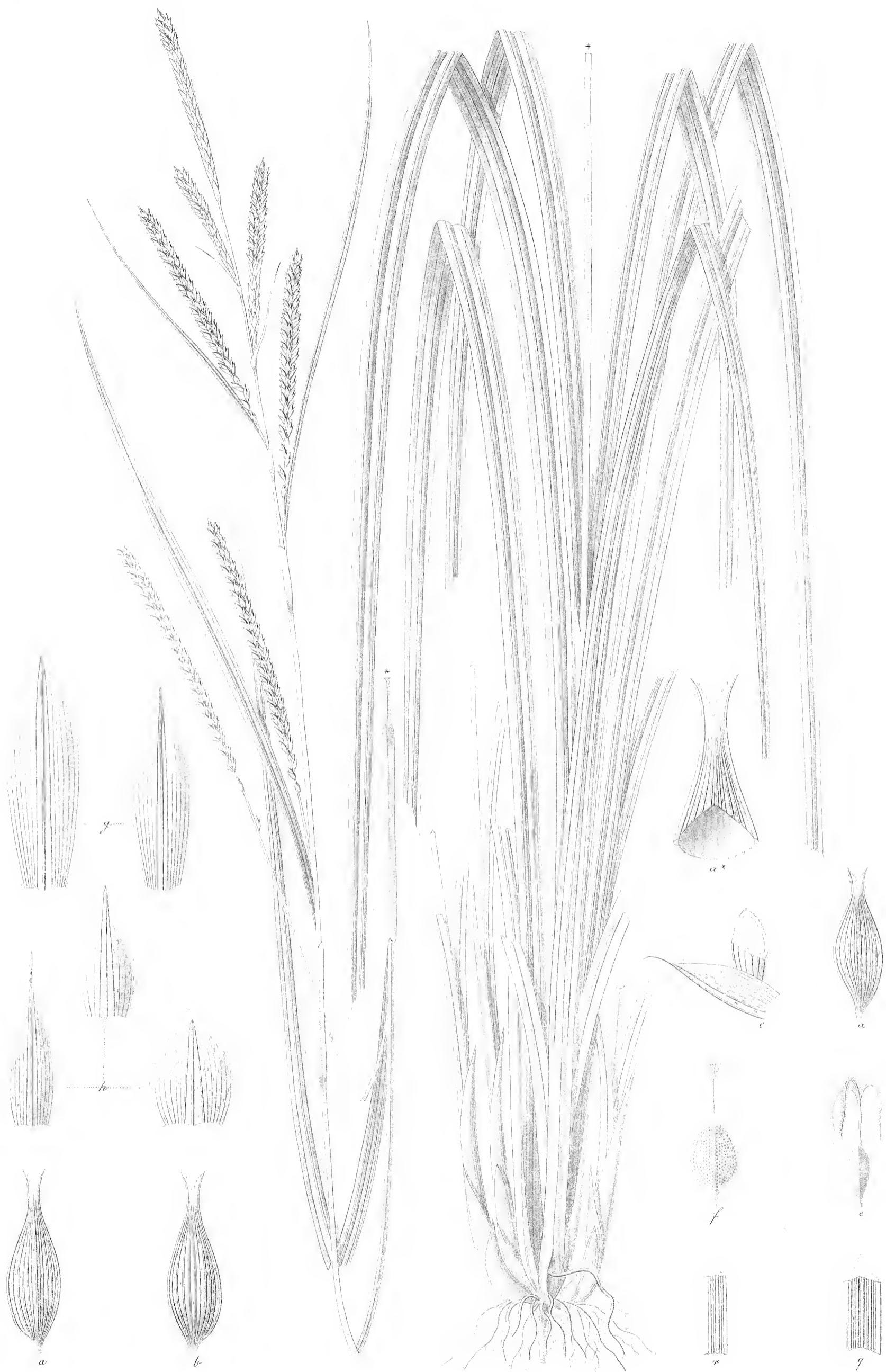


C. DISSITA.

No. 177



C. L A M B E R T I A N A .

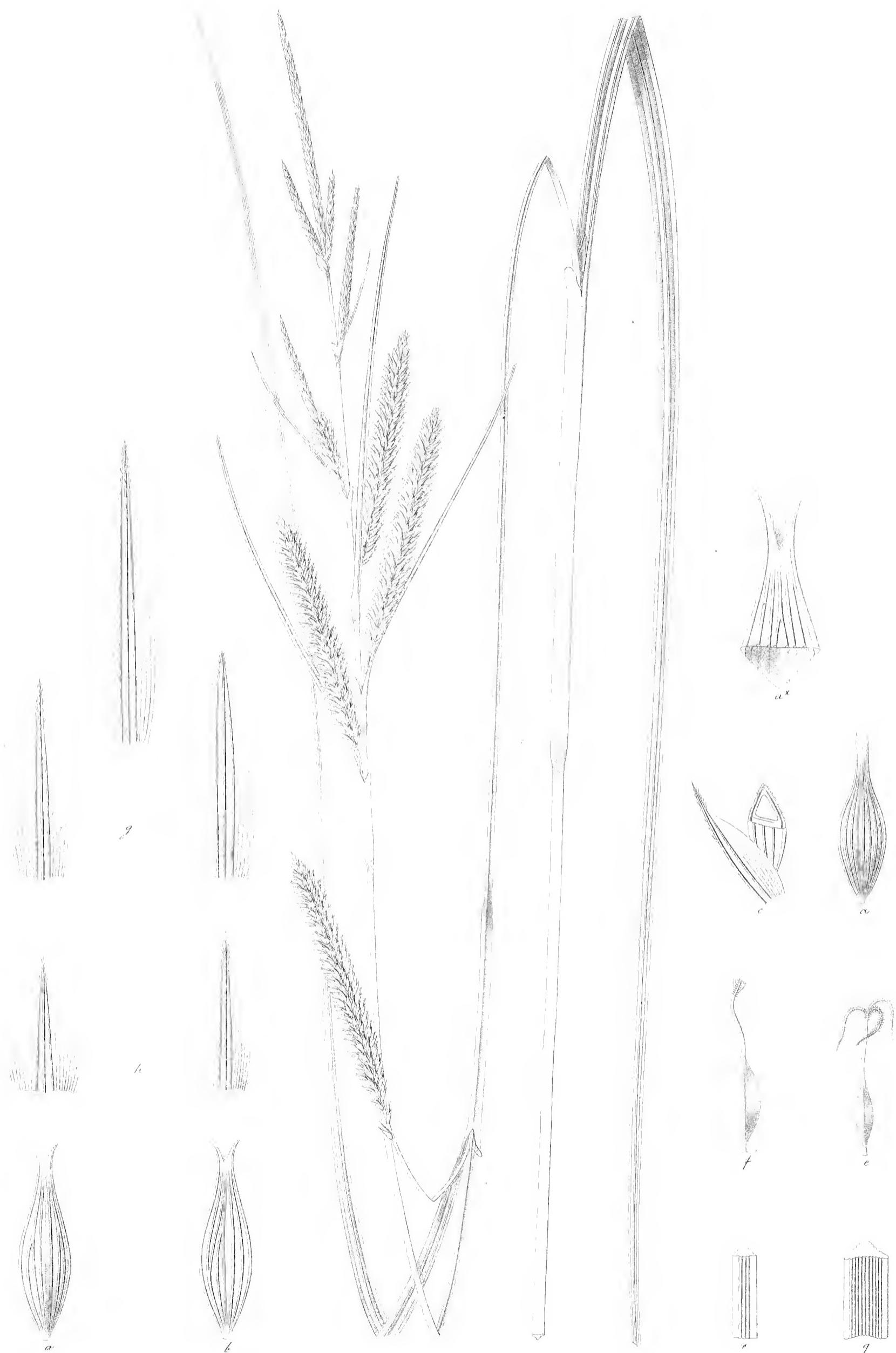


C. GEQUABINIS.

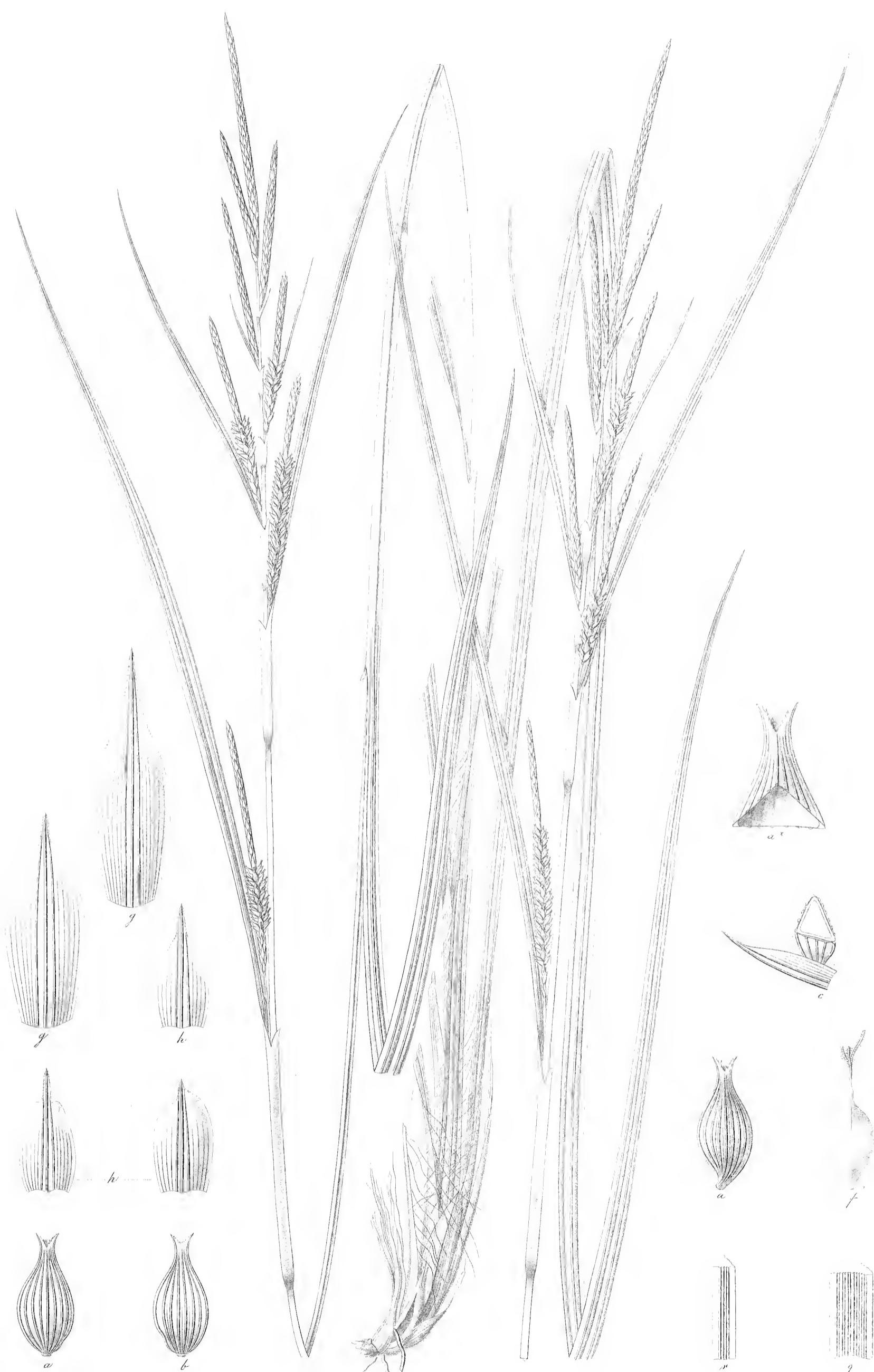
u.

P.

t. 179.



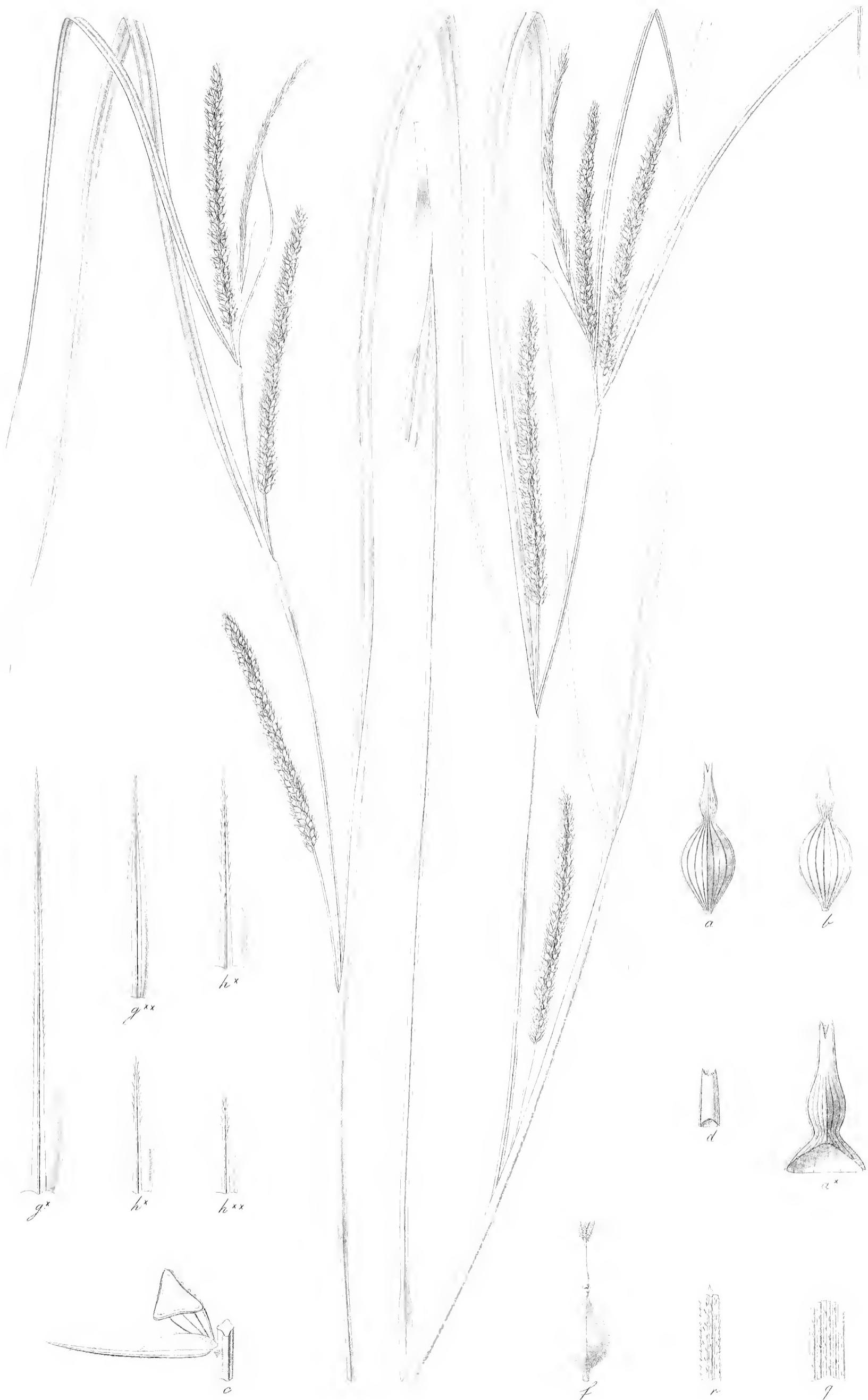
C. PRICE ALTA.



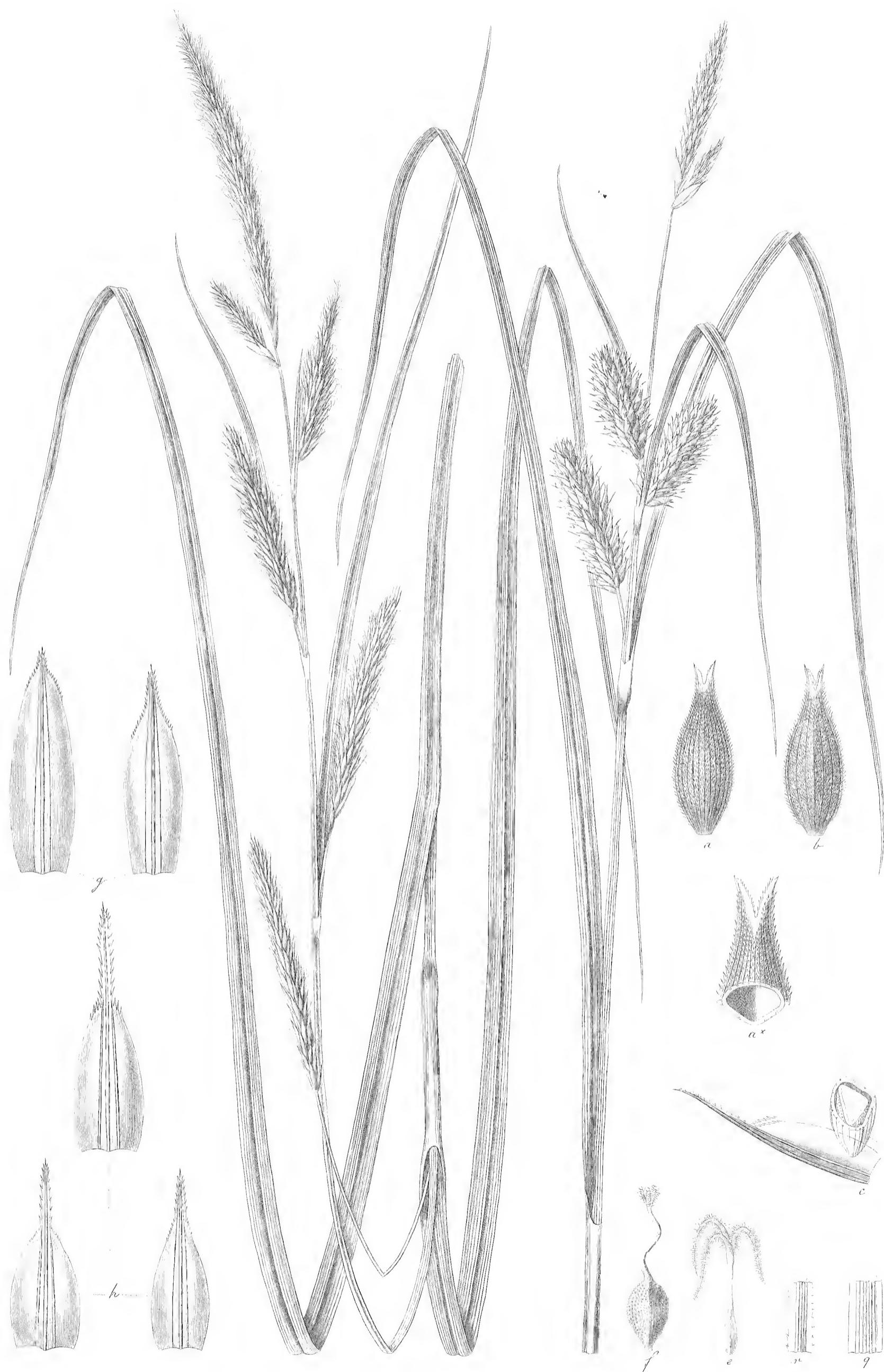
C. PROALTA, VAR.

M.

J.D.

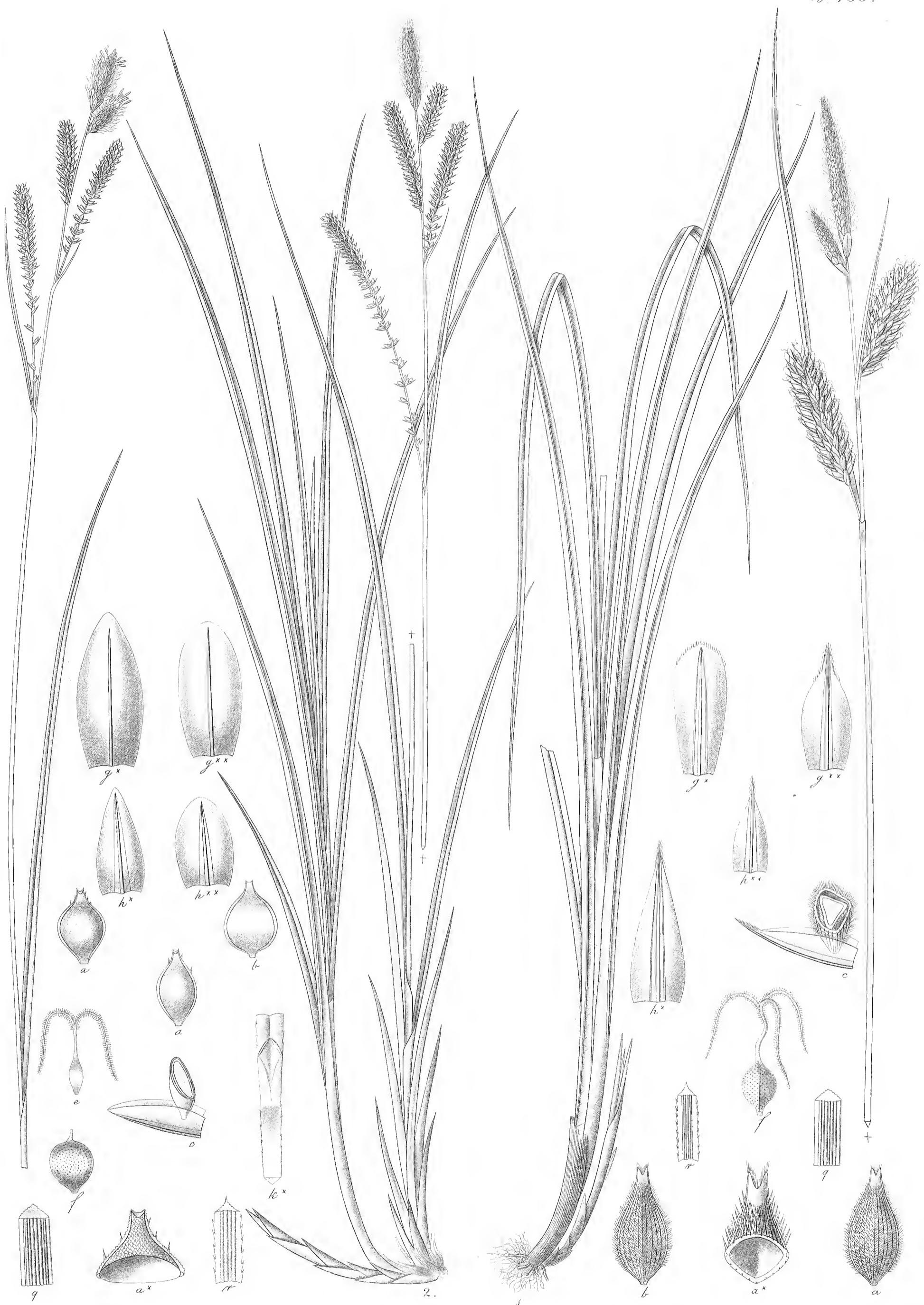


C. TUMIDULA.



C. BEECHEYANA.

*M.**L.*

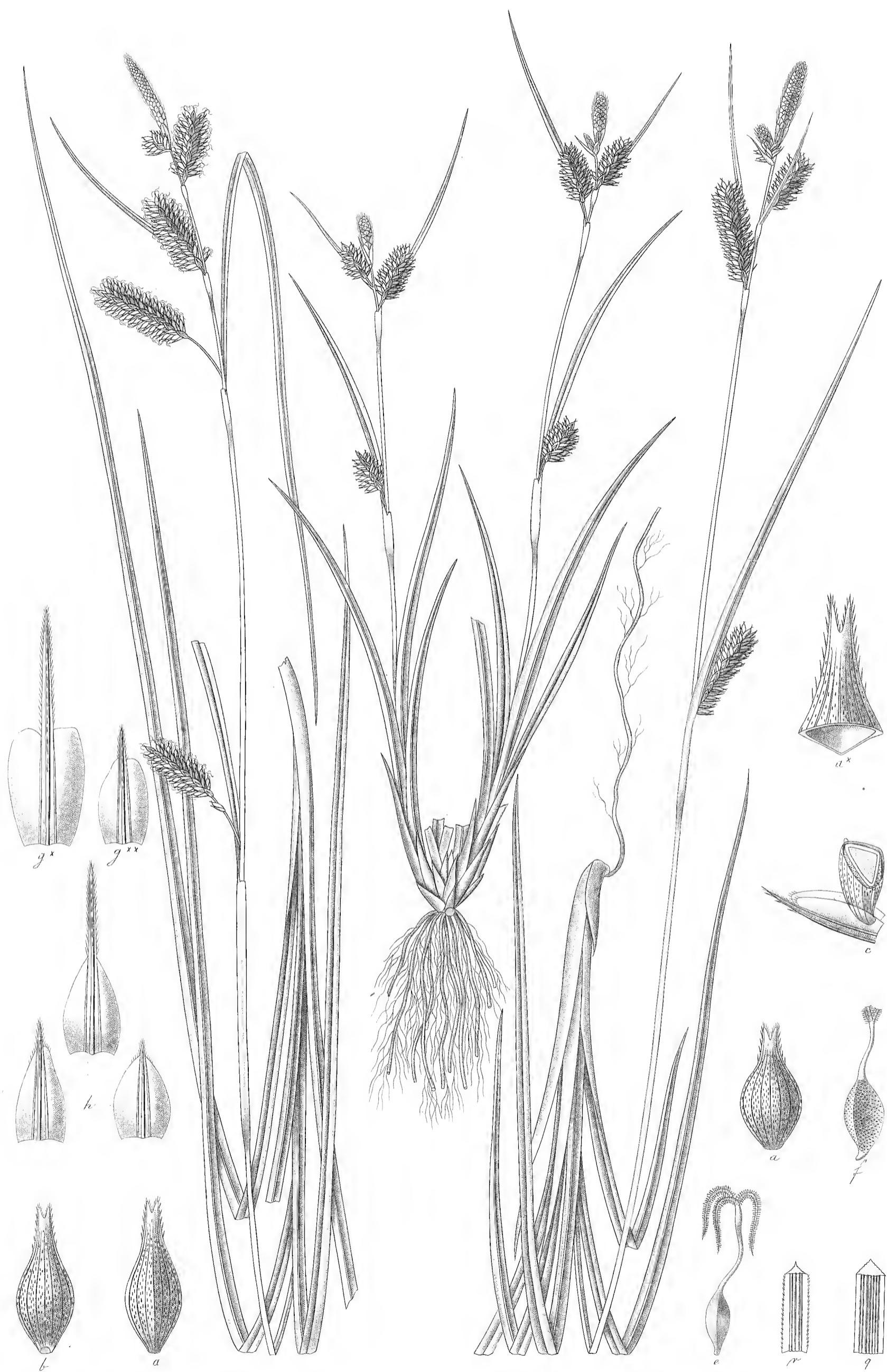


1. C. GEMATHORYNCHA.

2. C. VERTICILLATA.

M.

o.



C. INDECORA.

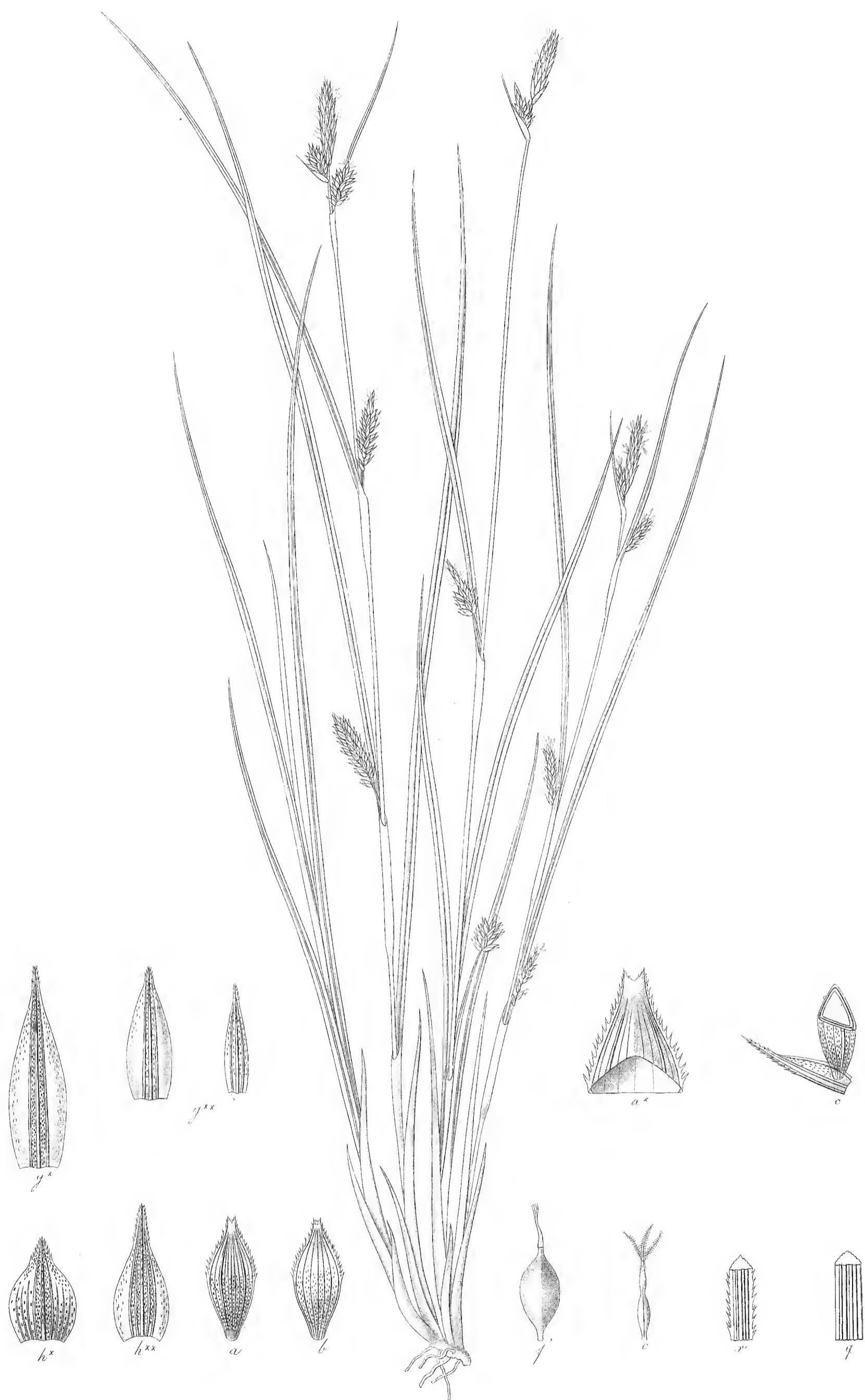
M.

c.



C. GUNNIANA.

*M.**P*



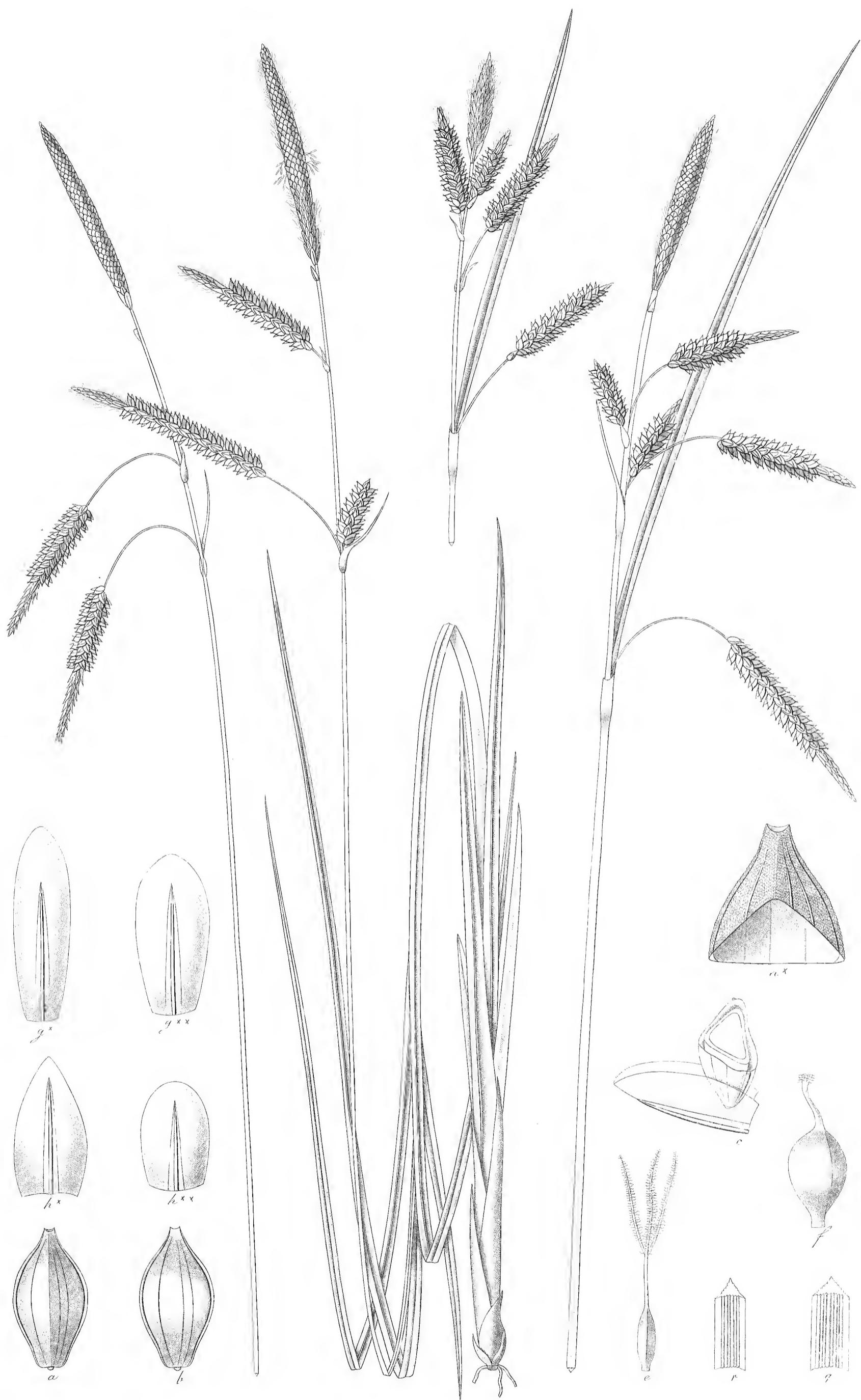


C. BARBATA.

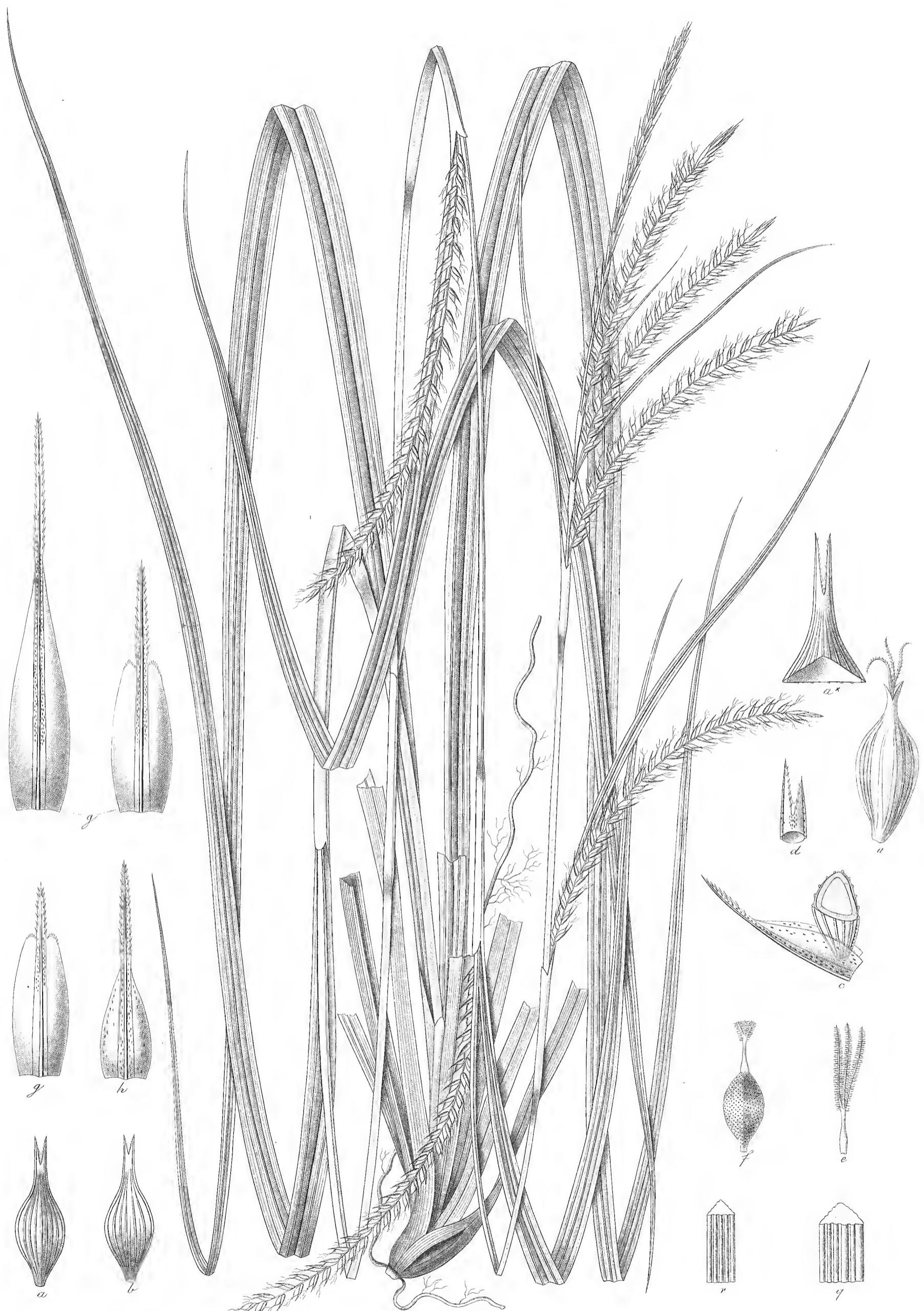
M.

P





C. BARTRAMI.





C. PSYCHROPHILA.



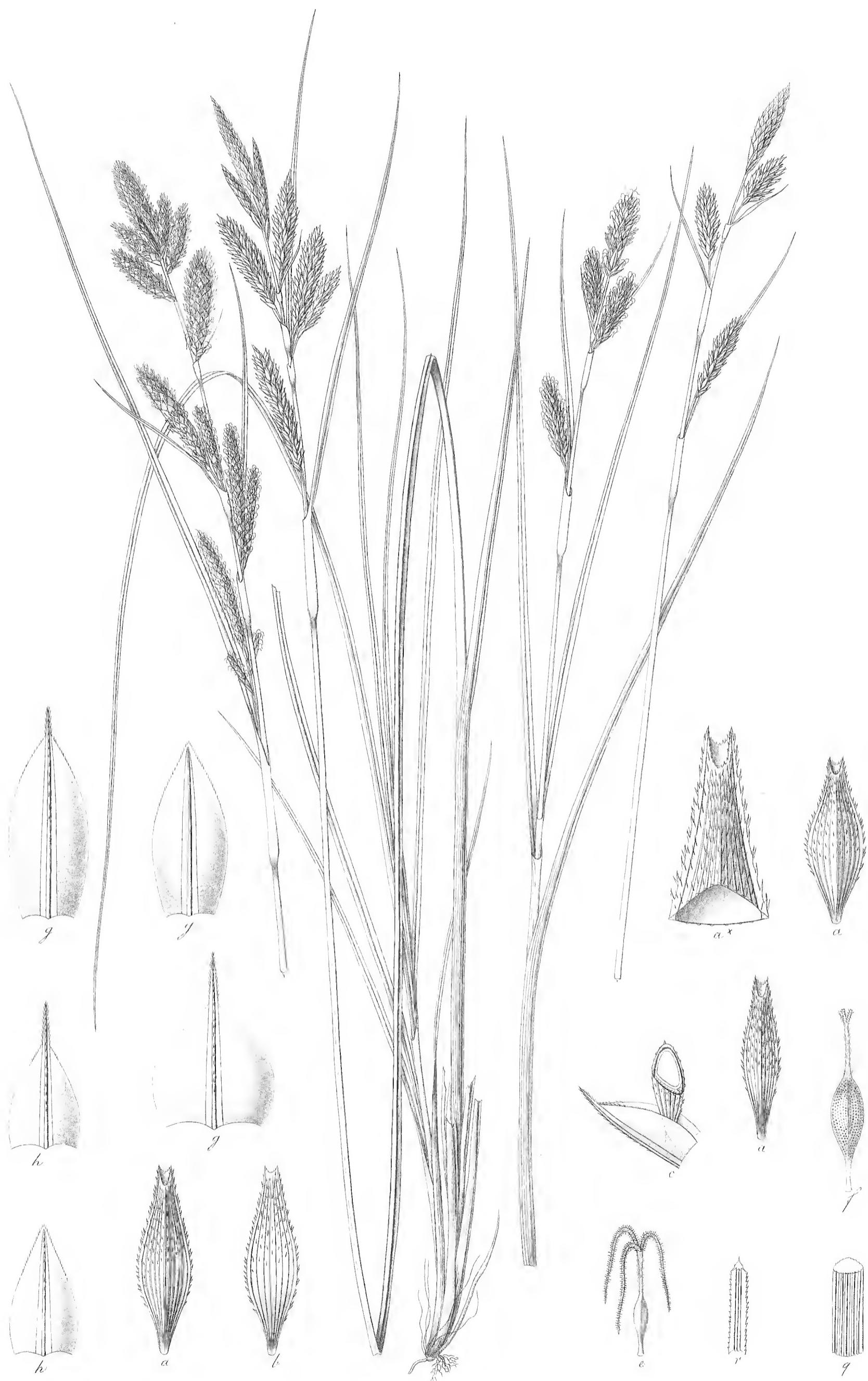
C , O B S C U R A .



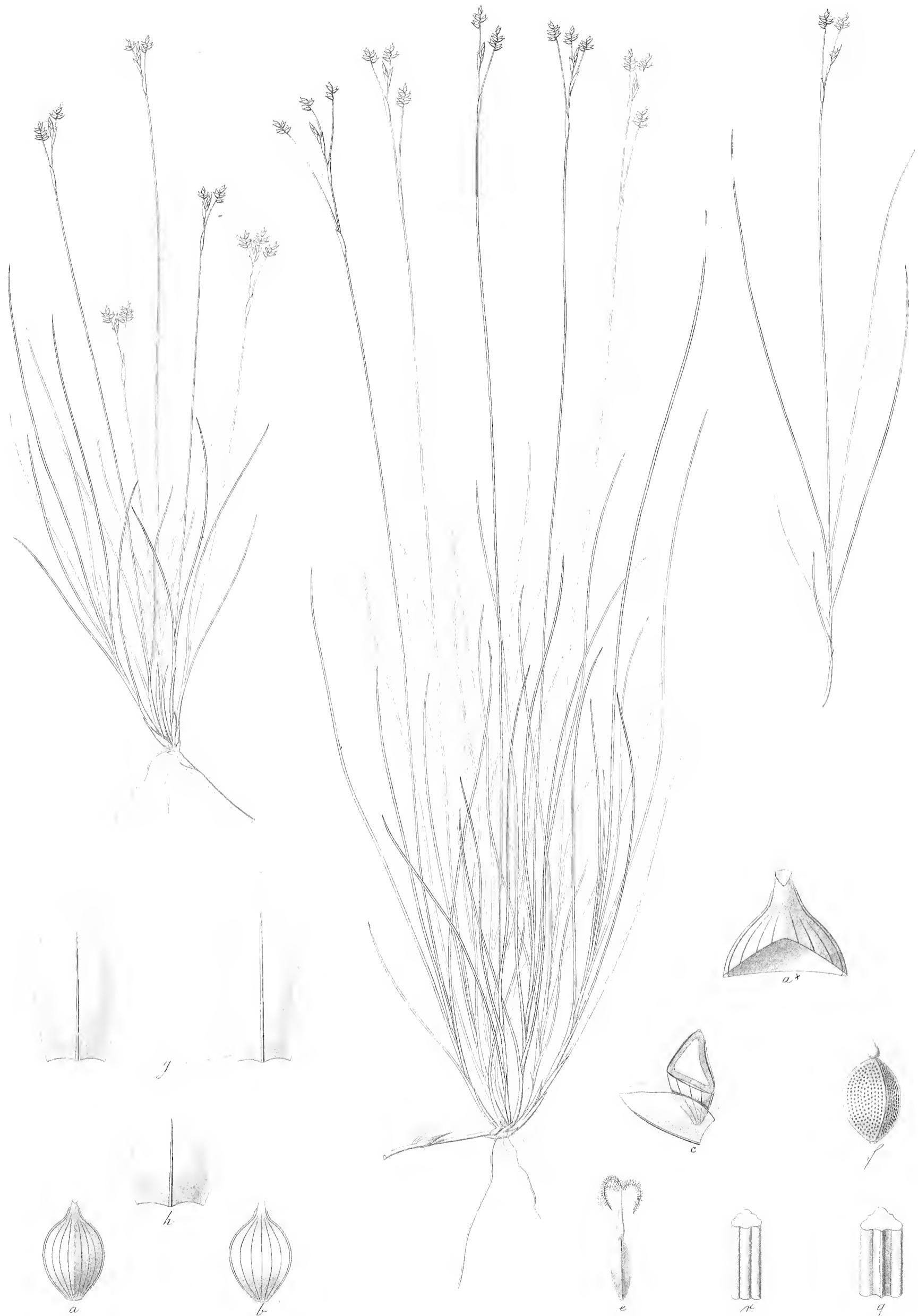
C. USTULATA.

2. *C. ALPINA* V. *EROSTRATA*1. *C. USTULATA* V. *MINOR*.





C. H E M A T O S T O M A.

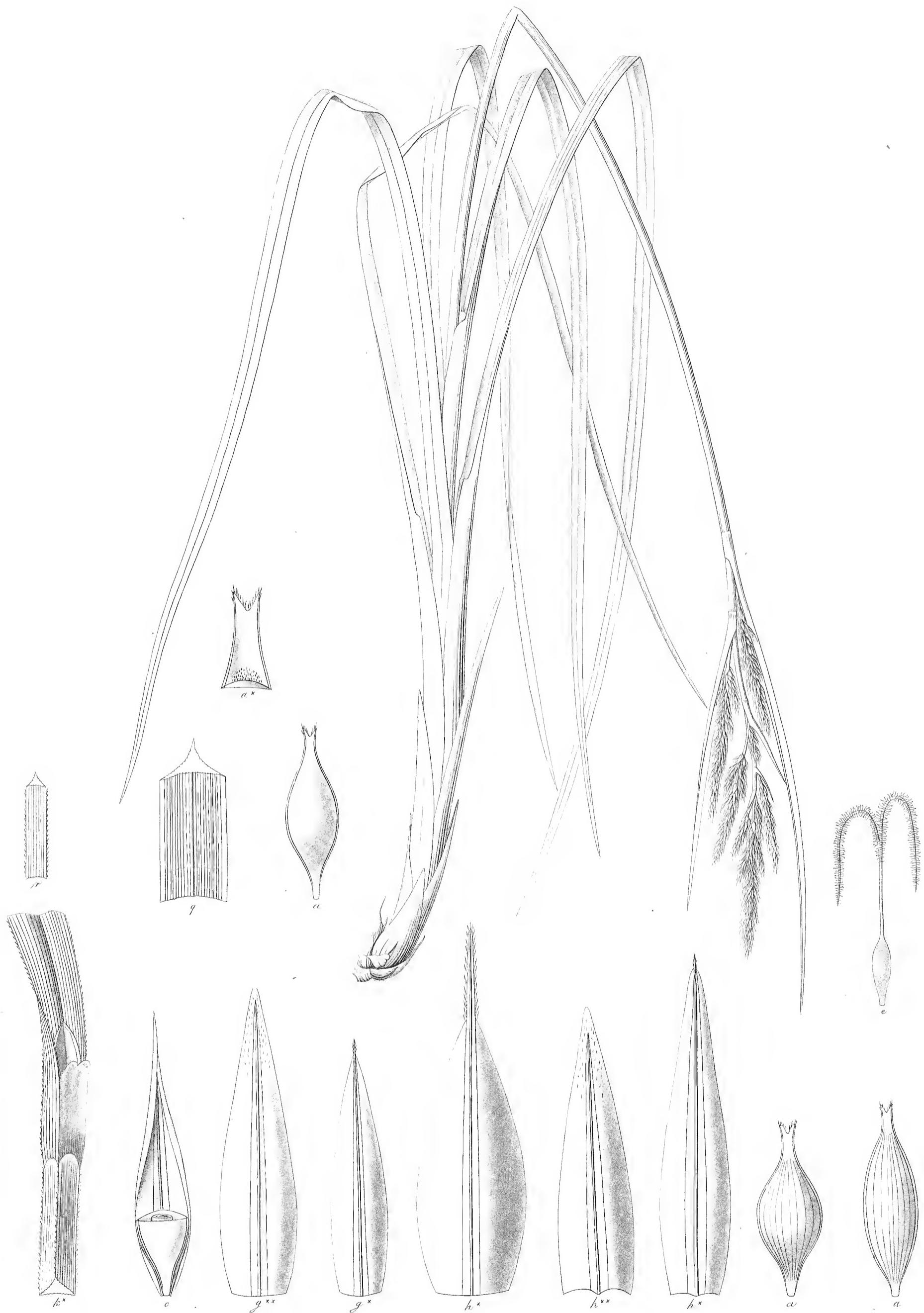


C. E B U R N E A.

*M.**P.*

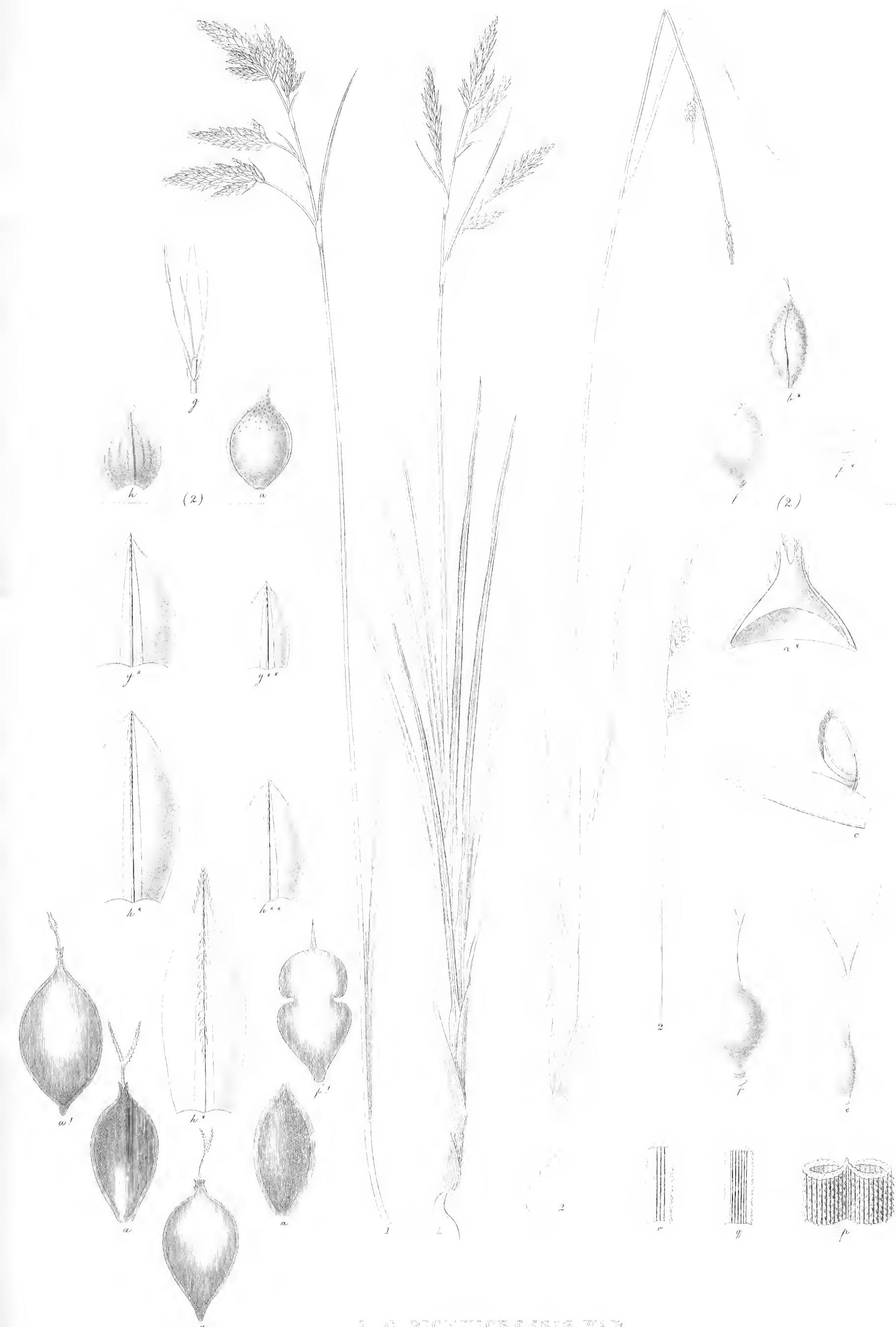


C. LEMNARIA.



C. PICHINCHENSIS.

*M**G*

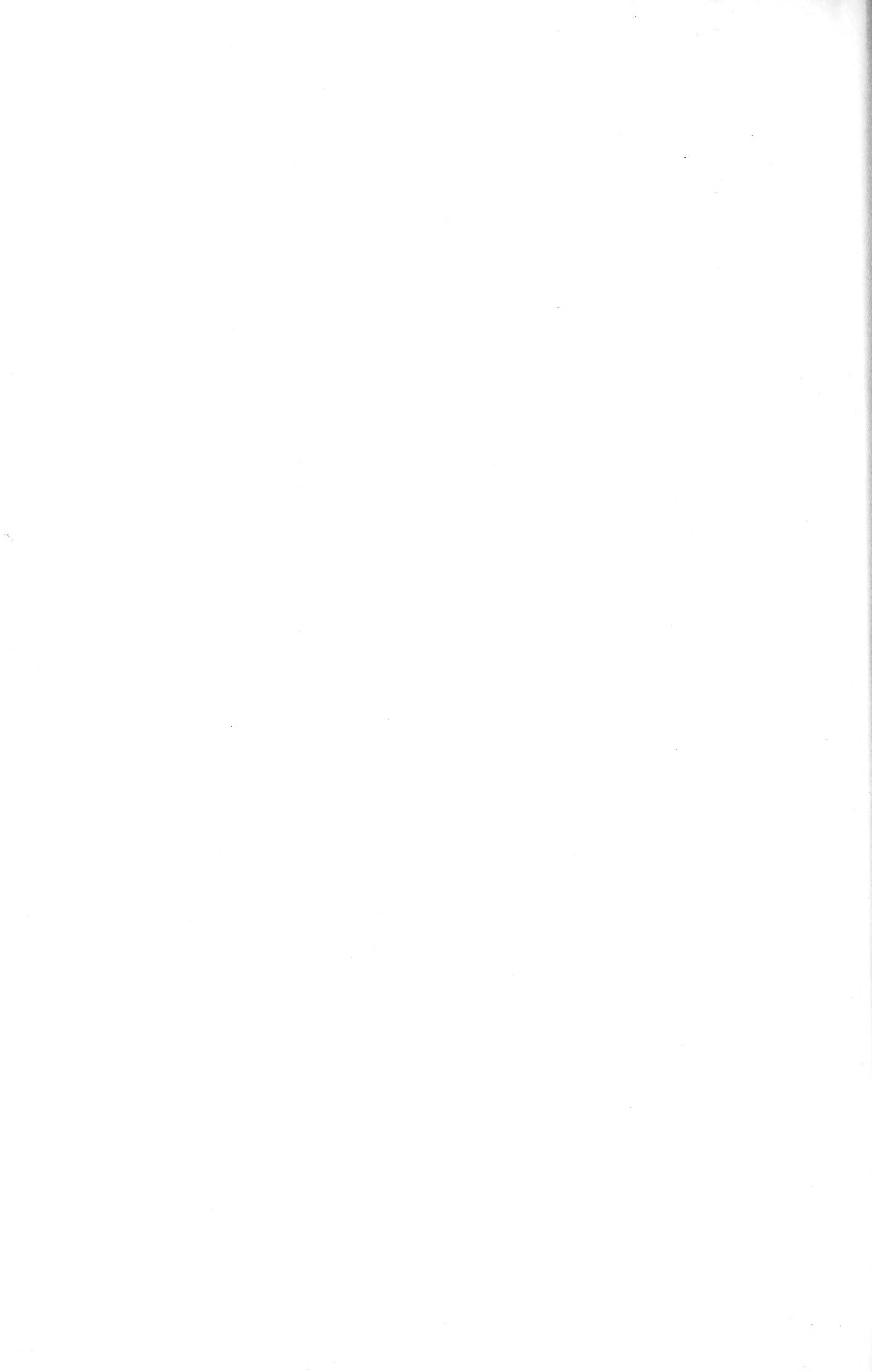


1. C. PUMILA VAR.

2. C. PUMILA VAR.

1583







3 9088 00616 1210